The Sensitive Side of Cost Effectiveness

Christine Hungeling

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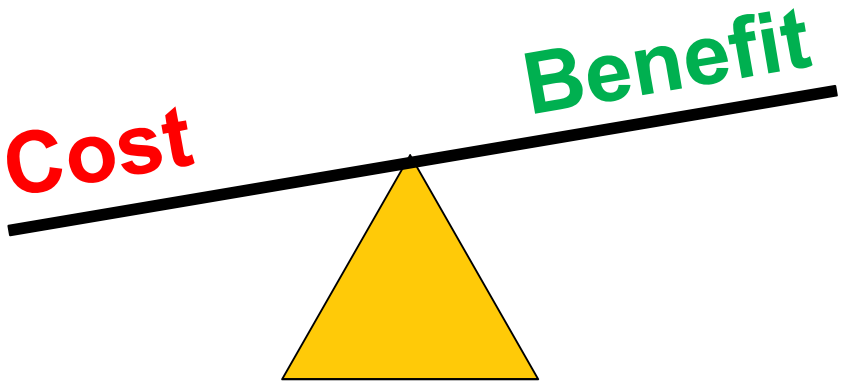
Cost Effectiveness

- Used for program planning and evaluation
- Ensures effective use of public funds
- Many inputs with varying levels of uncertainty and changeability



Cost Effectiveness Sensitivity Analysis

- Performed for the California Public Utilities Commission
- Ex Ante Portfolio from the 2010-2012 EE Program Cycle
- Performed using the Cost Effectiveness Tool (sql-based tool that mimics the excel based calculator as directed for use by the IOUs)

Cost Effectiveness Sensitivity Analysis

- What is the TRC?
- What is so sensitive?
- Why do we care?

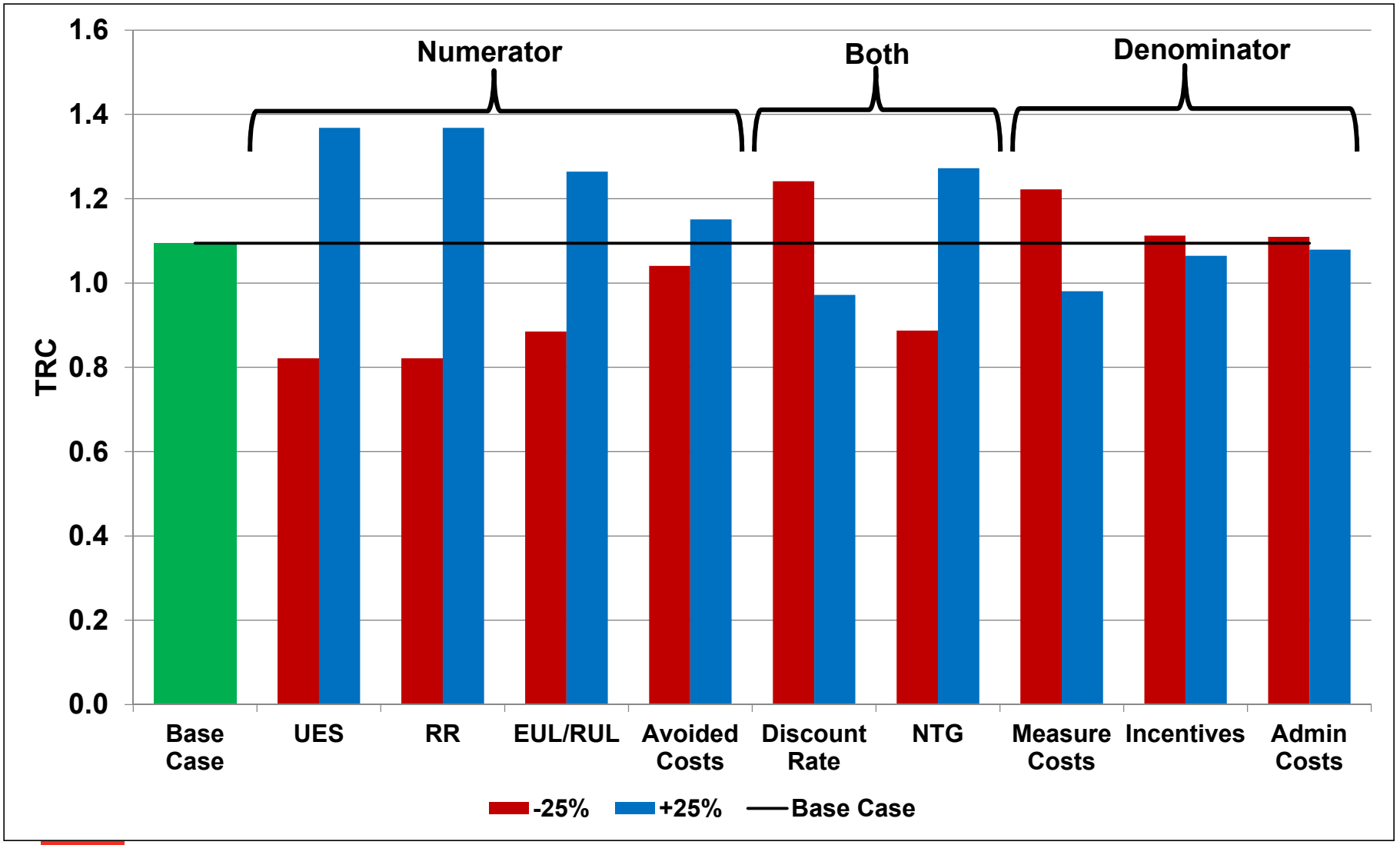
Total Resource Cost Test

$$TRC = \frac{NPV \sum(Net\ Avoided\ Cost\ Benefits)}{Gross\ Program\ Costs + (Net\ Participant\ Incremental\ Measure\ Cost)}$$

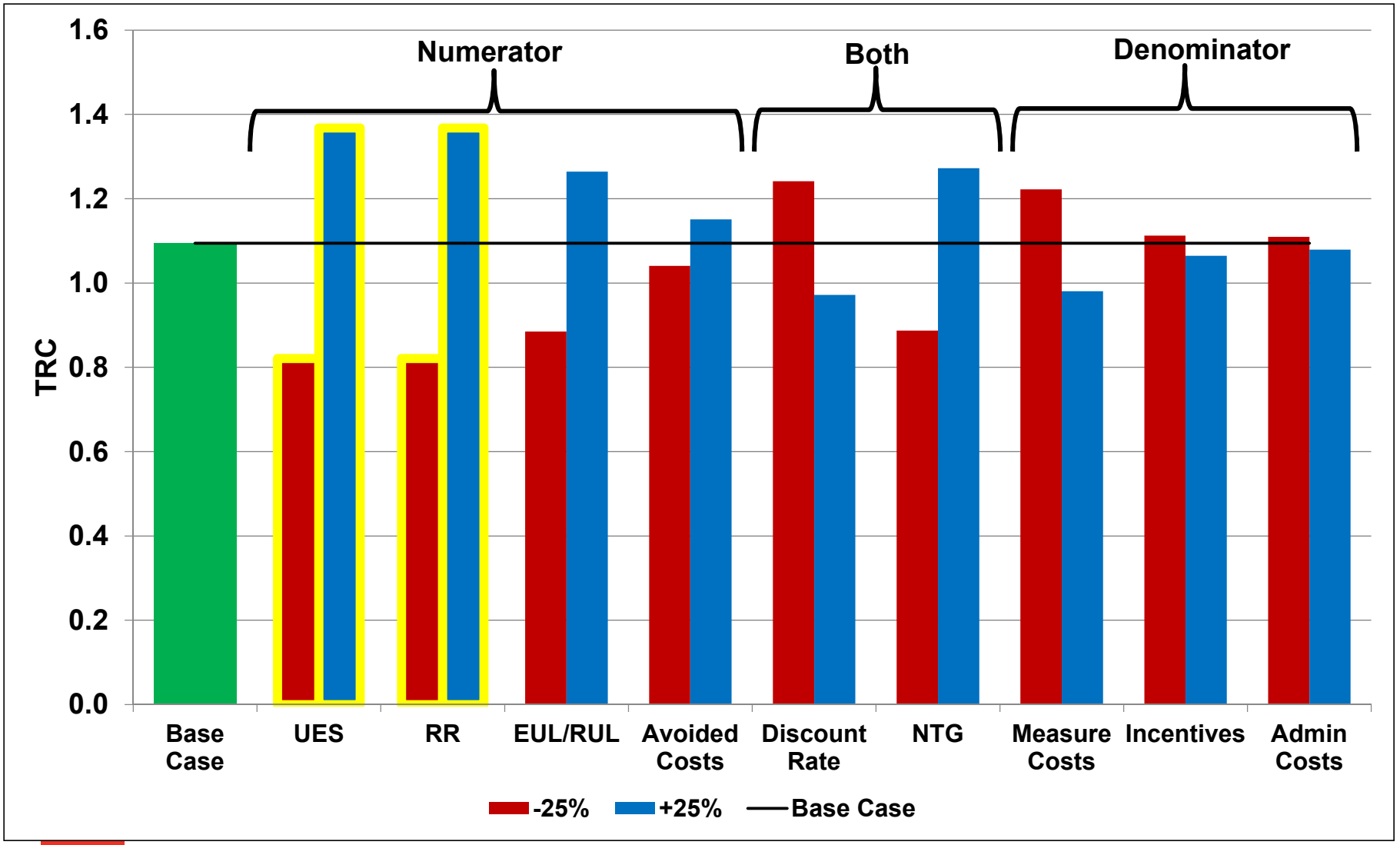
Parameter Adjustments

Parameter	Numerator	Denominator	Who Has an Effect?
Energy Savings	X		Evaluators
Realization Rate	X		Evaluators
Effective/Remaining Useful Life	X		Evaluators
Growth Rate of Avoided Costs	X		Policy Makers
Discount Rate	X	X	Policy Makers
Net-to-Gross	X	X	Evaluators
Gross Measure Cost		X	Evaluators
Incentives		X	Program Planners
Administrative Costs		X	Program Planners

California's Statewide Portfolio Sensitivity



California's Statewide Portfolio Sensitivity



Unit Energy Savings and Gross Realization Rate

25% increase = 25% increase in TRC

Avoided Cost Benefits=

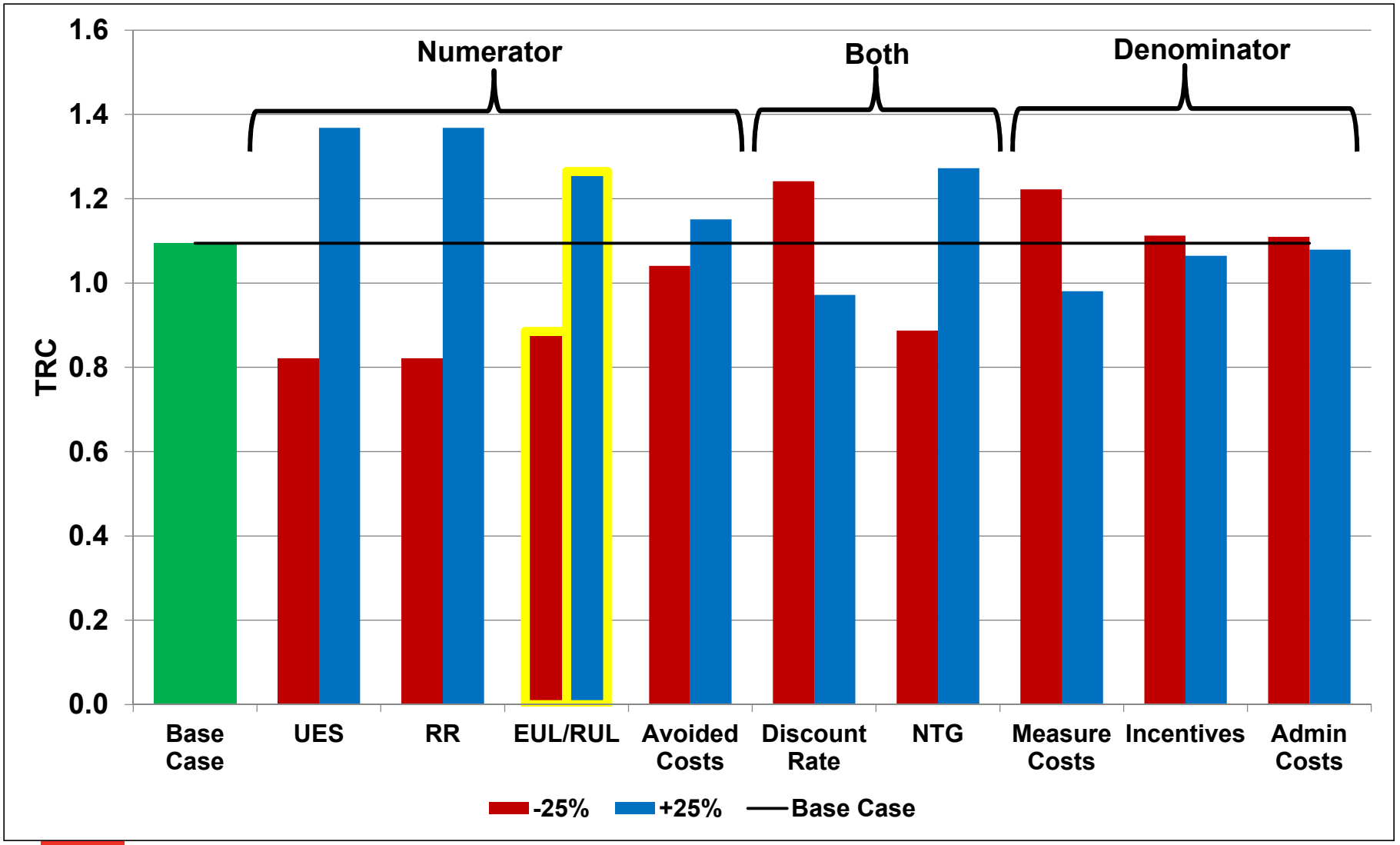
NTGR * **Energy Savings** * (Generation Avoided Cost + T&D Avoided Cost) +

NTGR * **Demand Reduction** * Capacity

Unit Energy Savings and Gross Realization Rate

- Takeaways:
  - Direct relationship
  - Focus evaluations on measures with the largest portion of the portfolio
  - Focus on the most uncertain measures

California's Statewide Portfolio Sensitivity

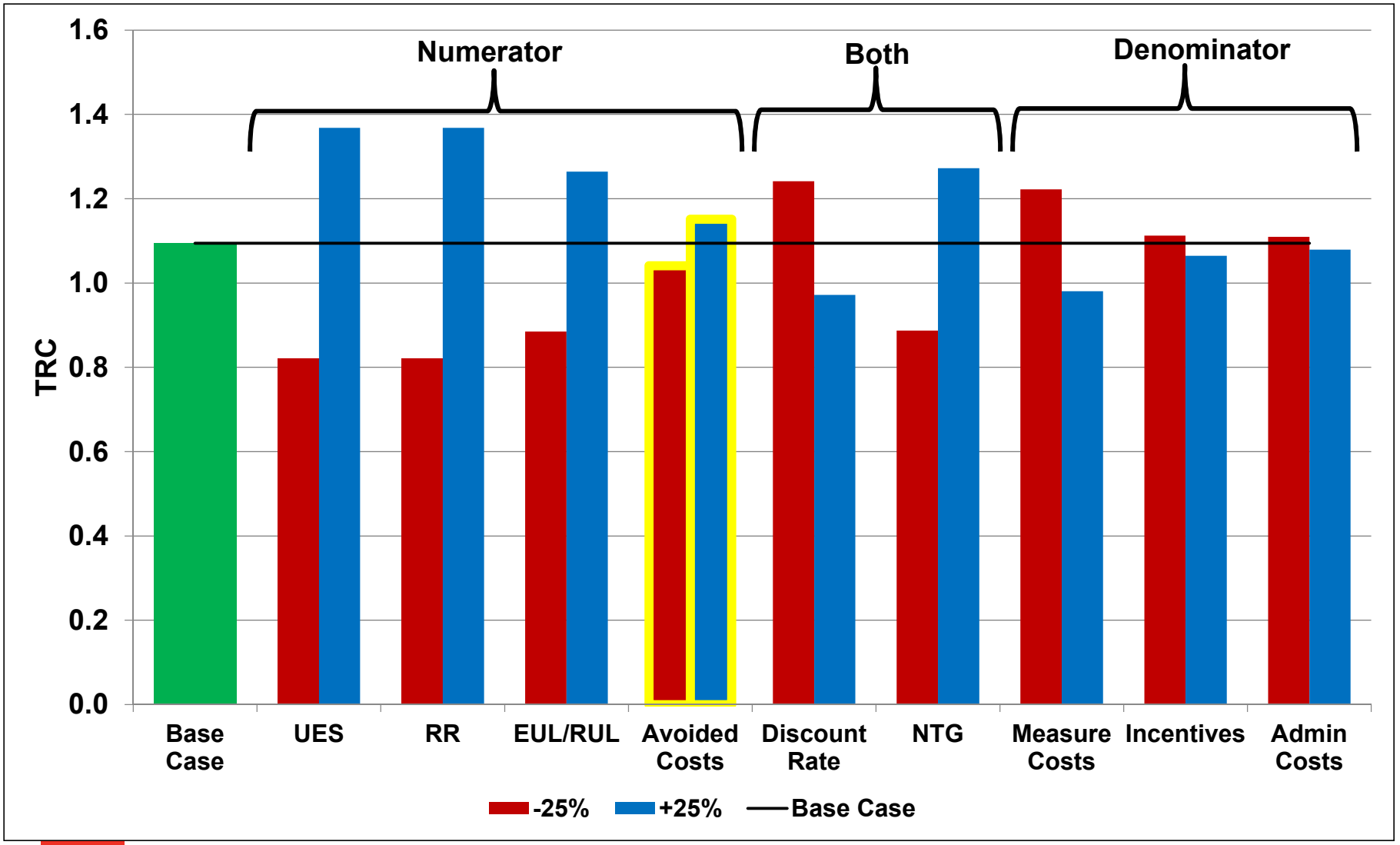


Effective Useful Life and Remaining Useful Life

25% increase = 0% - 22% increase in TRC

- Why?
  - Avoided costs are discounted in the future
    - A 25% increase in a longer lived measure is discounted more than a 25% increase in a shorter lived measure.
- Takeaways:
  - Focus on shorter lived measures with uncertain EULs

California's Statewide Portfolio Sensitivity

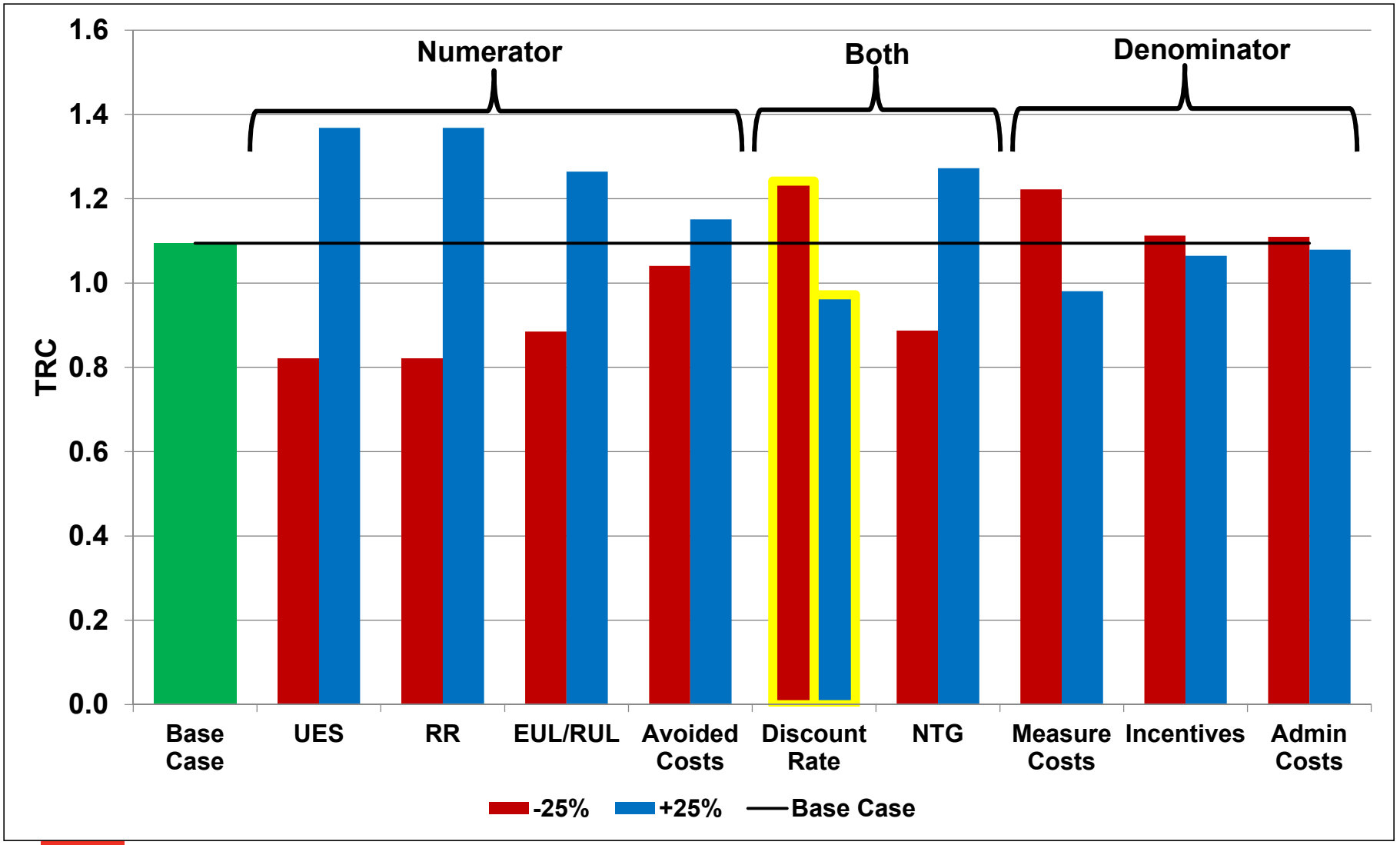


Growth Rate in the Avoided Costs

25% increase = 2% - 11% increase in TRC

- Why?
  - Avoided costs are generally assumed to increase in the future
  - Avoided costs are discounted in the future
- Takeaway:
  - The TRC is affected more the higher the growth rate in early years

California's Statewide Portfolio Sensitivity

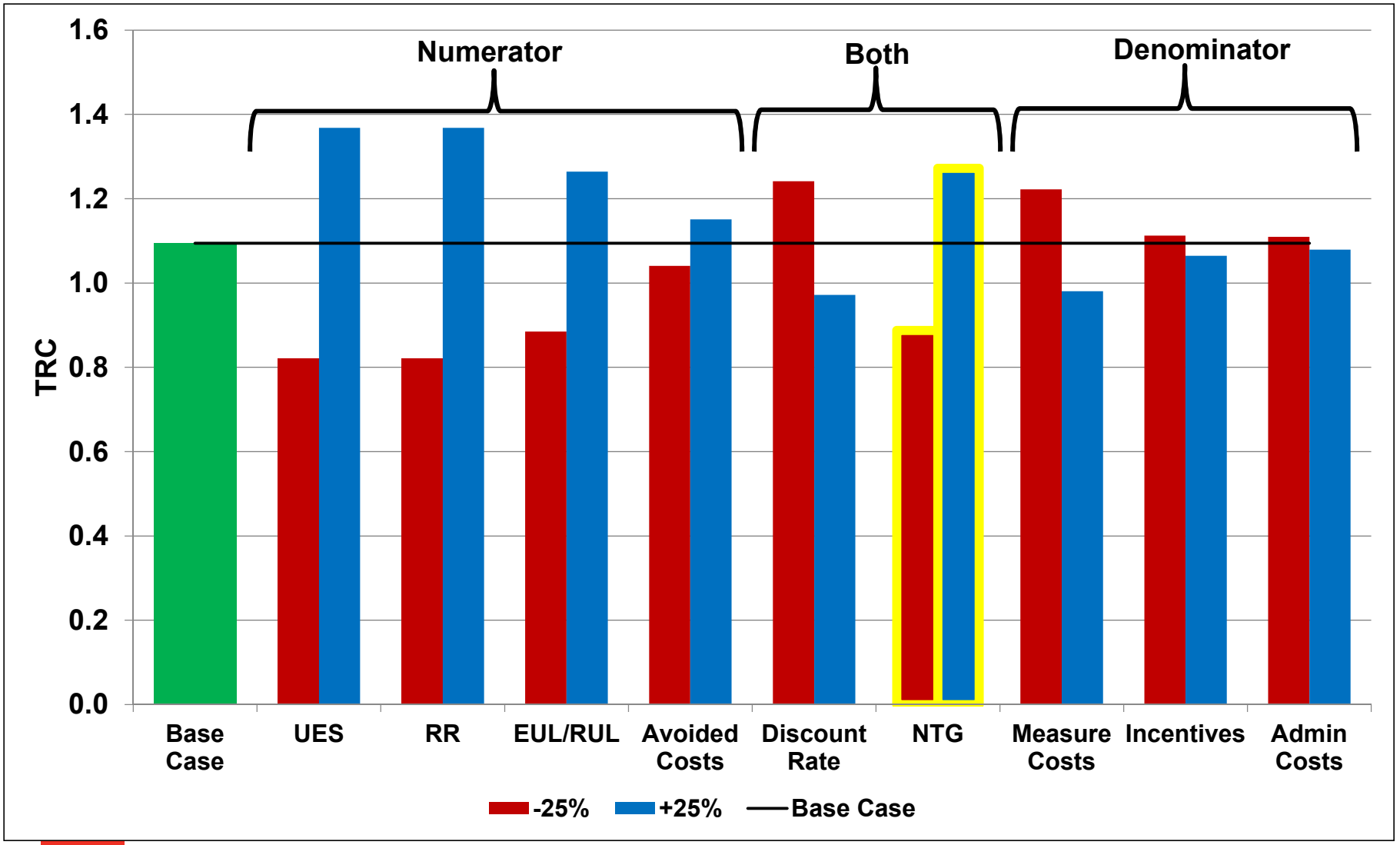


Discount Rate

25% increase = 5% - 17% decrease in TRC

- Why?
  - Affects the Benefits (numerator) almost exclusively
  - The higher the discount rate the lower the avoided costs in the future
- Takeaway:
  - Keep in mind for policy decisions related to the value of long-lived versus short-lived measures

California's Statewide Portfolio Sensitivity

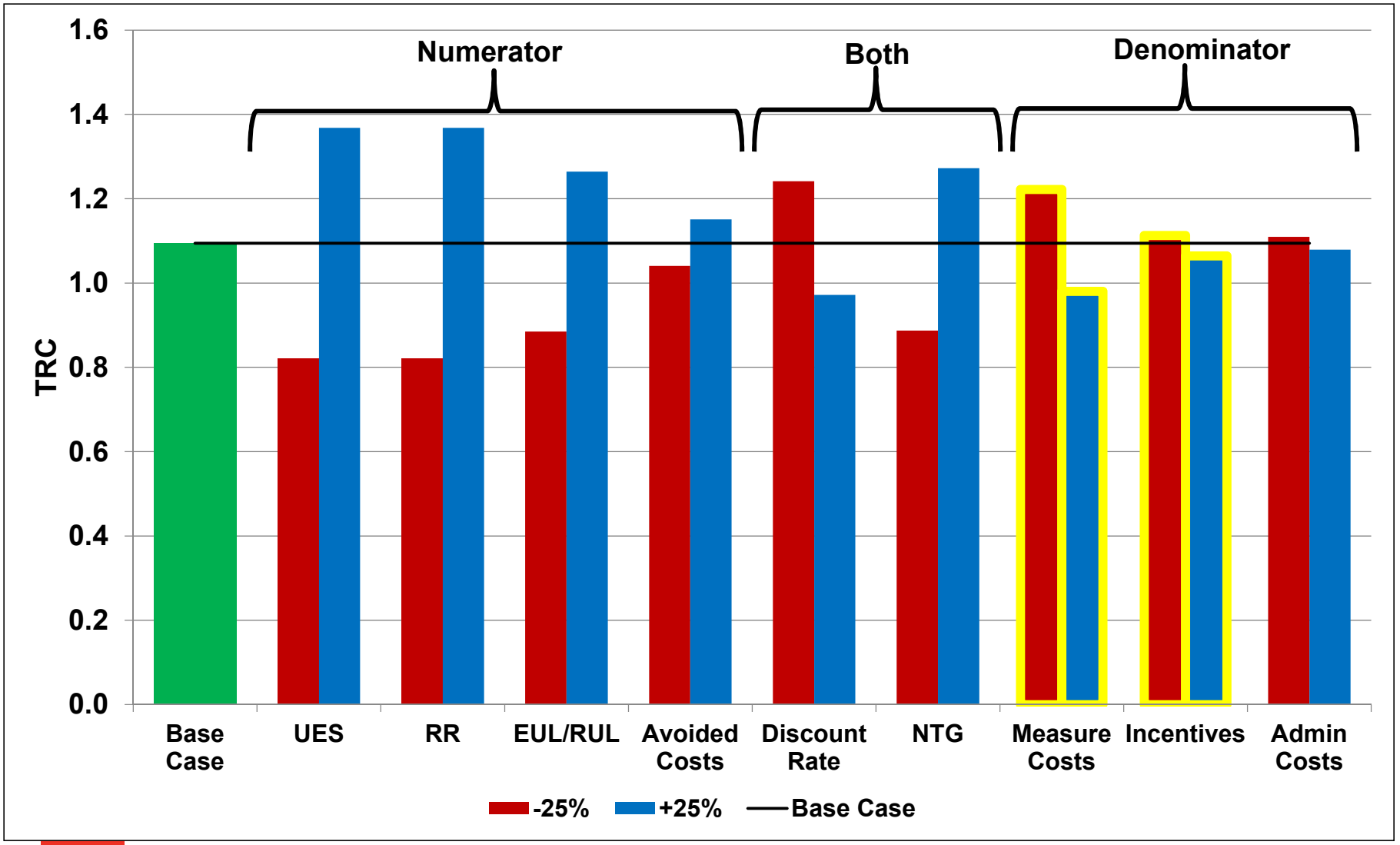


Net – to – Gross Ratio

25% increase = 5% - 14% increase in TRC

- Why?
  - Affects the whole numerator and part of the denominator (participant incremental measure cost)
- Takeaway:
  - Programs with high admin costs compared to participant costs are more affected by the NTG ratio

California's Statewide Portfolio Sensitivity



Incremental Measure Cost and Rebates/Incentives

$$TRC = \frac{NPV \sum(Net\ Avoided\ Cost\ Benefits)}{Gross\ Program\ Costs + (\boldsymbol{Net\ Participant\ Incremental\ Measure\ Cost})}$$

$$Net\ Participant\ Incremental\ Measure\ Cost = NTGR \times (Incremental\ Measure\ Cost - Incentive)$$

$$Gross\ Program\ Cost = Administrative\ Costs + Incentives$$

Incremental Measure Cost

25% increase = 0% - 18% decrease in TRC

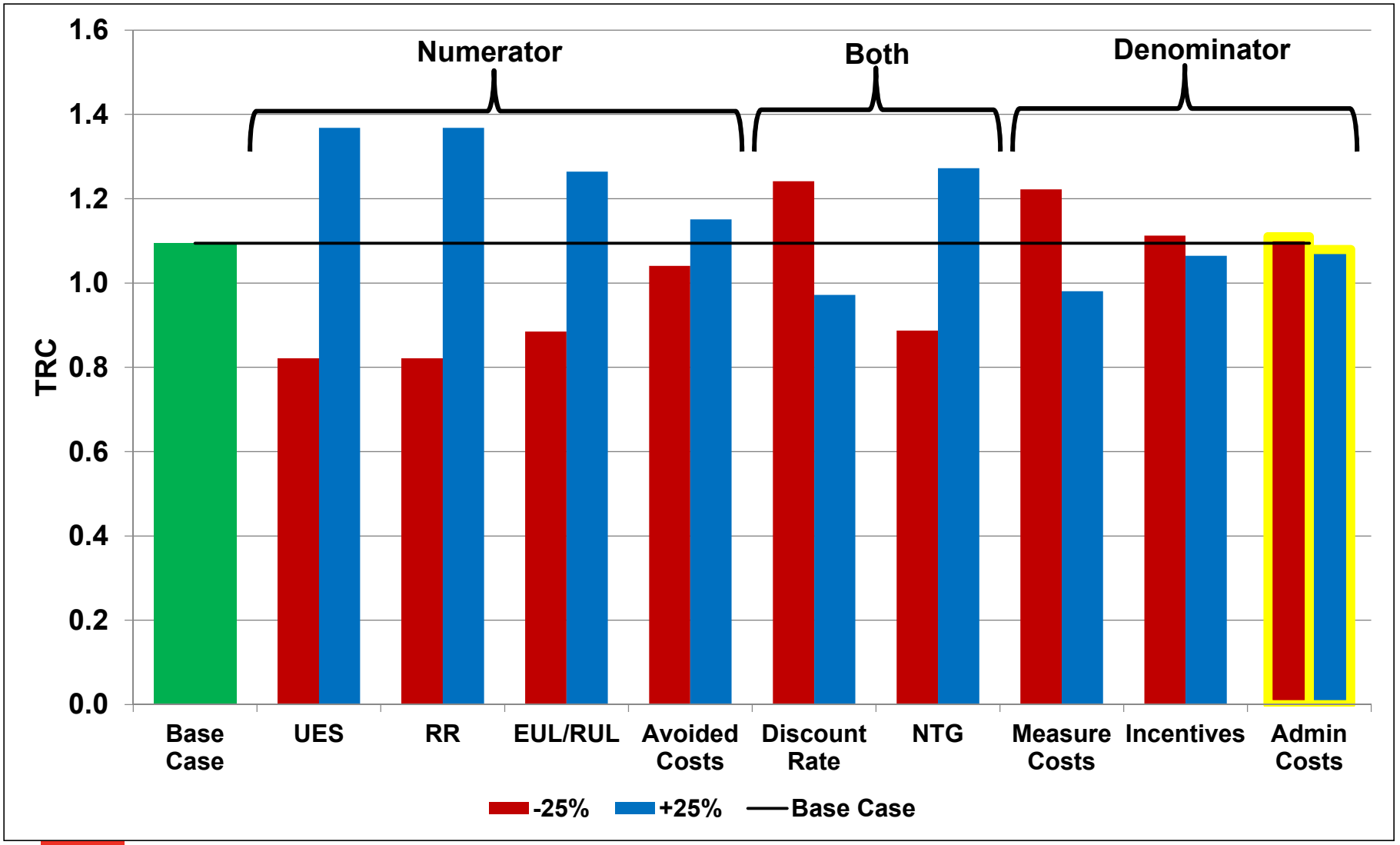
Incentives

25% increase = 1% - 4% decrease in TRC

Incremental Measure Cost and Rebates/Incentives

- Takeaways:
  - The incentives largely cancel each other out
  - Changes that result in a higher participant cost will result in a decreased TRC
  - This relationship differs in different jurisdictions' calculation of the TRC Costs

California's Statewide Portfolio Sensitivity

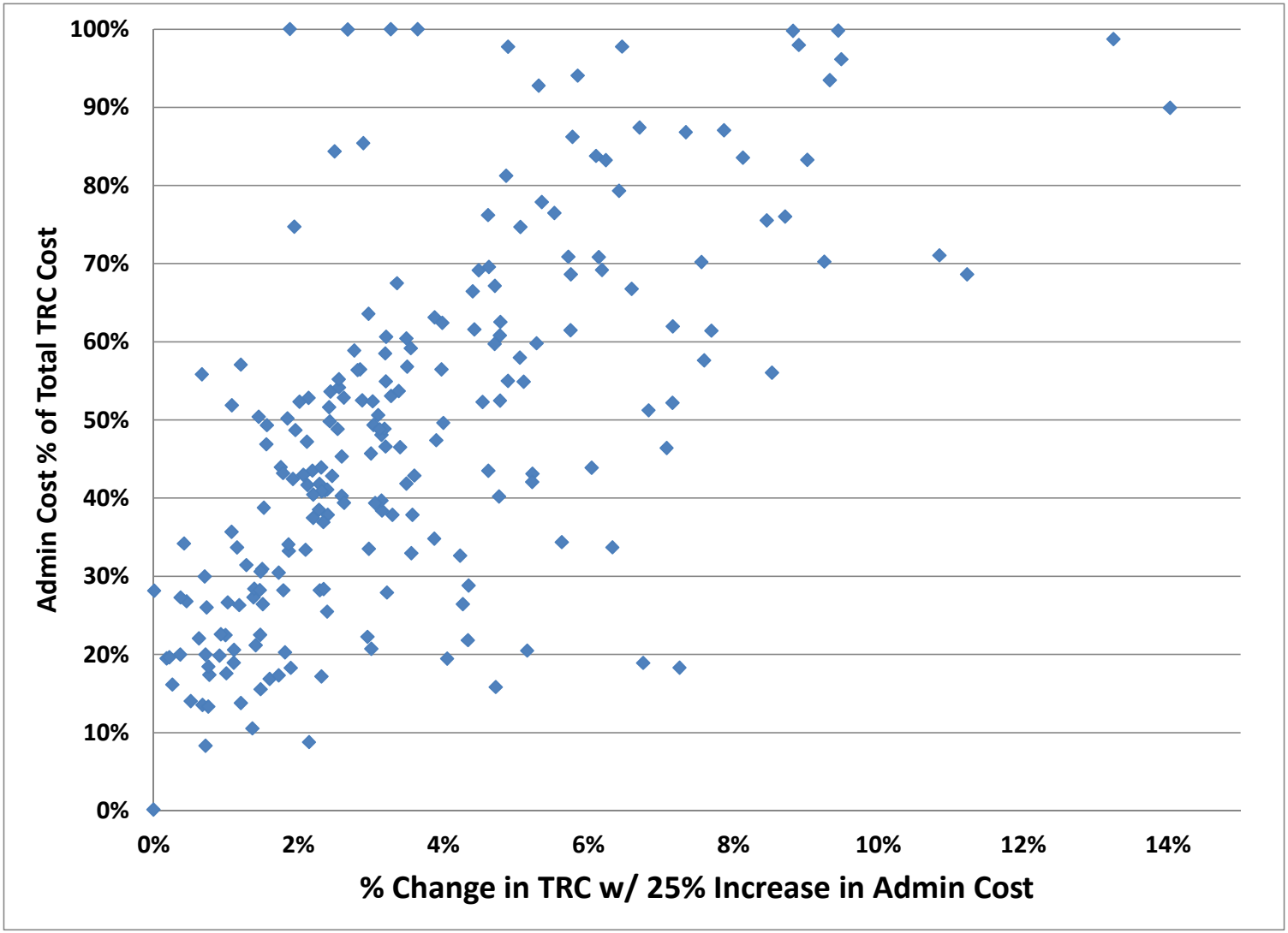


Administrative Costs

25% increase = 0% - 14% decrease in TRC

- Why?
  - Increasing part of the denominator decreases the TRC
- Takeaway:
  - Increases in the administrative costs of programs with a larger share of administrative costs versus participant costs are more effected.

Administrative Costs



Conclusions

- There are nuanced effects of each parameter.
- Careful consideration should be given on how to spend evaluation dollars based on the sensitivity and uncertainty of each parameter.
- Careful consideration should be given when making policy decisions related to the parameters of the TRC.

Thank you!!!

Christine Hungeling

Christine.Hungeling@itron.com

&

Jean Shelton

Jean.Shelton@itron.com

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