



Societal Cost Test Workshop



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Purpose and Scope of Today's Workshop

- Initiate a conversation with stakeholders on **approaches for addressing societal benefits** (including the “**social cost of carbon**”) in cost-effectiveness reviews of CPUC-jurisdictional programs
- Today's focus:
 - Walk through staff research (see resource material)
 - Recap 2013 workshop / straw proposal for a Societal Cost Test
 - Discuss new perspectives on “social cost of carbon” methods
 - Discuss options for potential Staff proposal

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Workshop Agenda

Time	Topic	Presenter
1:00-1:05	Welcome and Safety Procedures	Energy Division (ED) Staff
1:05-2:15	Background and Staff Research	ED Staff
2:15-3:00	Part 1: Societal Cost Test Methodologies (Recap 2013 workshop)	Energy + Environmental Economics (E3)
3:00-3:15	Break	
3:15-3:45	Part 2: Societal Cost Test Methodologies (New perspectives)	E3
3:45-4:45	Options for a Potential Staff Proposal	ED Staff
4:45-5:00	Next Steps	ED Staff
5:00	Adjourn	

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I. BACKGROUND AND STAFF RESEARCH

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IDER Proceeding (R.14-10-003) Background

- October 2015: ALJ ruling established Cost Effectiveness Working Group to (among other things) recommend:
 - Whether the CPUC should develop a Societal Cost Test, and if so, when (procedurally)
- May 31, 2016: Final Working Group Report CEWG did not achieve consensus; identified Societal Cost Test as a “Phase 3” issue.
- In comments, parties disagree on whether to pursue / prioritize the issue:
 - Support: MCE, Sierra Club, NRDC
 - Oppose or Skeptical: SoCalGas/SDG&E, PG&E, IEP, CLECA
 - Generally recommend deferring to Integrate Resource Plan (IRP)

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Integrate Resource Planning (IRP) Nexus

- The IRP proceeding (R.16-02-007) is just underway – many open questions re: DER valuation methods and applicability
- Current IRP schedule has LSE IRPs filed in 2017, and addressed by decision in 2018
- Until Commission guidance from IRP informs DER deployments:
 - Resource proceedings (EE, DR, etc.) must determine cost-effective levels to meet state mandates (e.g., SB 350) and policy goals
- Interim methods may be necessary
 - Provide a “bridge” method for considering social cost of carbon
- Extent to which IRP modeling will focus on non-carbon societal impacts is unclear

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Statutory Underpinnings (1)

- AB 3995 (1990) added Public Utilities Code § 701.1
- “Minimize cost to society” and “improve the environment”
 - **§ 701.1 (a):** The Legislature finds and declares that, in addition to other ratepayer protection objectives, **a principal goal of electric and natural gas utilities' resource planning and investment shall be to minimize the cost to society** of the reliable energy services that are provided by natural gas and electricity, **and to improve the environment** and to encourage the diversity of energy sources through improvements in [DERs].
- “Exploit all practicable and cost-effective” resources “not being exploited by another entity”:
 - **§ 701.1 (b):** The Legislature further finds and declares that, in addition to any appropriate investments in energy production, electrical and natural gas utilities **should seek to exploit all practicable and cost-effective conservation and improvements in the efficiency of energy use and distribution** that offer equivalent or better system reliability, and that are **not being exploited by any other entity**.
- Cited in various CPUC decisions (including DER-related) dating back to 1991

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Statutory Underpinnings (2)

- **§ 701.1 (c):** In calculating the cost-effectiveness of energy resources, including conservation and load management options, **the Commission shall include**, in addition to other ratepayer protection objectives, **a value for any costs and benefits to the environment, including air quality**
- Staff research has yet to uncover CPUC decision(s) adopting specific methods to implement § 701.1 (c)
- **Question to Stakeholders:** Did staff overlook any decisions?

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New Legislation: SB 350

- SB 350 (2015) added Public Utilities Code § 400.
The CPUC shall:
 - (a) Take into account the **use of distributed generation** to the extent that it provides **economic and environmental benefits in disadvantaged communities...**
 - (a) Take into account the opportunities to decrease costs and increase benefits, including **pollution reduction** and grid integration, using renewable and nonrenewable technologies **with zero or lowest feasible emissions of greenhouse gases, criteria pollutants, and toxic air contaminants onsite** in proceedings associated with meeting the objectives.
 - (e) To the extent feasible, **give first priority to** the manufacture and deployment of clean energy and pollution reduction **technologies that create employment opportunities**, including high wage, highly skilled employment opportunities, **and increased investment in the state.**
- CPUC procedural home for disadvantaged communities issues is TBD.
Advisory group to be established .

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Standard Practice Manual

- Originally published in 1983 to define cost-effectiveness tests from various perspectives
- CPUC decision dating to 1984 used the five basic tests (including the societal cost test) to review DSM expenditures¹
- “Total Resource Cost – Societal Variant” has existed in the SPM for some time, but...
 - Has never been fully operationalized for general use in all DER proceedings (since the early 1990s?)

¹ For example, see D.84-12-068 (OP 55)

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Historical Application of SPM Tests (1)

- 1984: Ratepayer impact (RIM) test was the principal test ¹
- 1992: The Total Resource Cost (TRC) test became the principal test ²
- 2005: Resource-specific SPM test applications begin³
- 2005: Guidance to the 2006-08 EE portfolio³
 - EE programs became subject to a “dual test”- TRC and Program Administrator Cost (PAC) test
 - Environmental externality adder adopted *for EE only*. But, for DG and DR, deferred to later “Phase 3” decision – *never happened*
 - Avoided costs with externality adder blessed as appropriate for the TRC – Societal Version
 - Declined to adopt a societal discount rate

¹D. 84-12-068

²D. 92-02-075

³D. 05-04-051

Historical Application of SPM Tests (2)

- 2009: DG proceeding adopted a Societal Test to evaluate California Solar Initiative with (slightly) different parameters ⁴
- 2015: Self-Generation Incentive Mechanism (SGIP) evaluation reports begin to utilize a “Societal TRC (STRC),” yet another variant
- 2016: SGIP adopts STRC as “soft criteria” for reviewing technology eligibility, until superseded by a consistent SCT in the IDER⁵
- **Key take-away:** Application of SCT has been varied and inconsistent
- **Question to Stakeholders:** Is this history accurate / complete?

⁴D. 09-08-026

⁵D. 16-06-055

Cost Effectiveness “Mapping Project” (1)

- Determine similarities / differences across DER proceedings
- Finding: Many differences
 - Some justified by different statutory mandates (e.g., ESA program’s “hardship reduction”) or technologies (e.g., DR adjustment factors)
 - Many due to disparate policy priorities or disjointed timing of decisions among multiple balkanized proceedings
- Tests used for program funding, evaluation, and tech / measure eligibility. (Evaluation studies least consistent.)
- Treatment of non-energy impacts (NEIs) varies greatly

Category	Definition	Examples
Societal	Indirect benefits accruing to (or costs incurred by) all members of society.	Social costs of carbon, economic impacts and job creation, public safety and health impacts
Utility	Indirect benefits accruing to (or costs incurred by) the utility or other program administrator.	Fewer customer service calls, improved customer relations
Participant	Indirect benefits accruing to (or costs incurred by) the program participants.	Improved ability to manage energy use, feeling “green,” increased comfort

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“Mapping Project” (2)

- SPM tests used for **EE and ESA** do not include societal NEIs; but **DR** does (at least, qualitatively)
- Exception is 2006-2012, when a carbon adder was included.

Resource	Specific Program	Use of SPM Test	Non-energy impacts (NEIs) included
Energy Efficiency (EE)	Core programs	funding approval	Not included*
	Energy Services Assistance Program (Low Income EE)	funding approval, measure add - back	Cost-effectiveness tests designed specifically for this program include specific participant and utility NEIs. Does not include societal NEIs
	Water/Energy	incorporated into EE tests	Includes estimates of the avoided environmental costs of water that accrue to water users.
Demand Response (DR)	All DR programs, including Permanent Load Shifting	funding approval	Includes social NEIs in the TRC , utility NEIs in the TRC, PAC and RIM, and participant NEIs in the PT. Quantification of NEIs is optional, but utilities are required to provide a qualitative analysis.

**With the exception of the Predicted Avoided Cost of GHG, which was included the Avoided Cost Calculator for EE up until the 2016 calculator update (see carbon price discussion below).

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“Mapping Project” (3)

- SGIP and CSI general market evaluations use(d) slightly different versions of a Societal Test
- CSI low-income evaluations used different (higher) carbon value
- 2013 NEM evaluation did not include societal NEIs

Resource	Specific Program	Use of SPM Test	Non-energy impacts (NEIs) included
Customer Generation	Self-Generation Incentive Program (SGIP)	Evaluation study, tech eligibility	2015 study included a “Social TRC,” with a lower discount rate. D.16-06-055 adopts the “STRC” as a “soft” criteria for screening technologies for SGIP eligibility
	California Solar Initiative (CSI)	Evaluation study only	2011 study used a social test which included a value of \$0.01 per kWh for health effects and national security impacts
	Net Energy Metering (NEM)	Evaluation study only	Not included in 2013 ratepayer impacts study
	MASH/SASH (low income solar)	Evaluation study only	Includes participant and utility NEIs. Does not include social NEIs, except it used the EPA GHG value for GHG costs, instead of the predicted avoided cost of GHG in the avoided cost calculator.

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“Mapping Project” (4)

- Cost-effectiveness methods for EVs, storage are still TBD
- Specific societal benefits methods in DRP “locational net benefits analysis (LNBA)” is TBD

Resource	Specific Program	Use of SPM Test	Non-energy impacts (NEIs) included
Electric Vehicles (EV)		TBD	SB 350 defines a set of “ratepayer interests,” which are a set of NEIs that may accrue to ratepayers as the result of electric vehicle adoption.
Storage		TBD	AB 2514 says to consider the “co-benefits from reduced emissions of criteria pollutants” for storage technologies.
Distributed Resource Planning		TBD	Feb 2015 Guidance Ruling directs utilities to include societal avoided costs which can be clearly linked to the deployment of DERs in their net benefits analysis.

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Carbon Prices in Avoided Cost Models

- Pre-cap & trade (2006-2012): Synapse predictions
- Carbon price inputs to the avoided cost model changed after the AB 32 cap & trade (C&T) system became operational¹
- NEM 2.0 public tool, SGIP evaluations, etc. have used C&T price
- 2016 avoided cost calculator update uses C&T price²

Model	Method	Data Source	\$/tonne carbon
2011 EE and 2012 DR avoided cost calculator*	Predicted avoided cost of GHG (mid-level scenario)	Synapse consulting "meta-analysis"	\$ 25
2016 IDER avoided cost calculator (draft)**	Cap and trade (C&T)	C&T market prices	\$ 13
2013 ED consultant proposal	Low social cost of carbon	Point estimates from various studies	\$ 50
	High social cost of carbon		\$ 200

* This version of the calculator was used for the most recent EE and DR budget applications.

** Update underway pursuant to D.16-06-007 (IDER).

¹D. 12-05-015 directed the switch-over to cap-and-trade price, when available.

² Draft Resolution E-4801.

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Comments or Questions?

Recap:

- Statutory underpinnings
- Standard Practice Manual history
- IDER mapping project results
- Carbon prices in avoided cost models

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IV. OPTIONS FOR A POTENTIAL STAFF PROPOSAL

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Option 1: A Societal Cost Test

- Develop a Societal Cost Test, and adopt it for use consistently across all DER proceedings
- Stakeholder process to inform recommendations on:
 - What specific method (what to include)
 - How CPUC should use the test in its evaluations / decision-making
- Specific SCT method:
 - What discount rate?
 - Air quality health effects?
 - Social cost of carbon (beyond C&T price)?
 - Other?

Stakeholder question: Comments on these SCT methodology issues?

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Option 1: A Societal Cost Test (2)

- CPUC guidance on how to use the test
- Some sub-options for consideration...

Sub-Option	Description	Preliminary Assessment
1A	SCT required, and used as the principal test a priori	<ul style="list-style-type: none"> • Prioritizes environment over rate impact, etc. • Embeds non-financial factors into evaluations • Highly prescriptive; may conflict with “just and reasonable”
1B	SCT required, and used as additional info	<ul style="list-style-type: none"> • Proceedings determine role in decision-making • Inconsistent applications of test may result
1C	Specific blended test (e.g., 50/50 SCT:TRC) required	<ul style="list-style-type: none"> • Provides balancing test of competing objectives • Highly prescriptive, if required as primary test • Inconsistent applications, if additional info only

Stakeholder question: Comments on these options?

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Other Options to Address Societal Benefits

- **Option 2:** Add a “social cost of carbon” value to the TRC (but no other societal impacts), and...
 - Option 2A: Require it be used as the principal test, a priori, across DERs
 - Option 2B: Defer to individual proceedings on its application
- **Option 3:** Consider “social cost of carbon” and other societal benefits in qualitative assessments outside of SPM tests, and standardize their presentation across proceedings.
- Options 1 and 2 could be combined

Option	Description	Preliminary Assessment
2	TRC + social cost of carbon (SCC)	<ul style="list-style-type: none"> • Similar to 2006-2012 era avoided cost policy • Not a strictly financial test • Not a cost necessarily borne by the utility or participant (depending on SCC method)
3	Qualitative assessments outside of SPM tests	<ul style="list-style-type: none"> • Achieve consistency in which societal impacts are considered / how present to decision-makers • Proceedings determine the ultimate role • May be perceived as carrying less weight

Stakeholder questions: What other options?

Comments on options?

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Questions / Discussion

- For follow-up inquiries, please contact:

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APPENDIX

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Standard Practice Manual Tests

Abbr.	Name	Perspective	Description
TRC	Total Resource Cost	Utility + Participant	Combines the costs and benefits of the program administrator (usually the utility) and the participants
PAC	Program Administrator Cost	Utility	Includes costs and benefits experienced by the program administrator (usually the utility)
RIM	Ratepayer Impact Measure	Impact on rates	Includes all PAC costs and benefits, plus changes in revenues
PCT	Participant Test	Participant	Includes costs and benefits experienced by the participants
SCT	Total Resource Cost – Societal Variant (a.k.a. Societal Cost Test)*	Society	Includes all TRC costs and benefits, plus several environmental benefits and a lower discount rate

*A societal test was proposed by staff in 2013 but never fully operationalized for general use in all California DER proceedings.

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Social Cost of Carbon Definitions

- According to the US EPA (see background material)

“The SC-CO₂ is meant to be a comprehensive estimate of climate change damages and includes changes in net agricultural productivity, human health, property damages from increased flood risk, and changes in energy system costs, such as reduced costs for heating and increased costs for air conditioning.”
- EPA further states

“However, given current modeling and data limitations, it [the SC-CO₂] does not include all important damages. The IPCC Fifth Assessment report observed that SC-CO₂ estimates omit various impacts that would likely increase damages. The models used to develop SC-CO₂ estimates, known as integrated assessment models, do not currently include all of the important physical, ecological, and economic impacts of climate change recognized in the climate change literature because of a lack of precise information on the nature of damages and because the science incorporated into these models naturally lags behind the most recent research.”
- USEPA has used the SCC to analyze the carbon dioxide impacts of various rulemakings since 2010, including but not limited to car and truck standards, the final rulemaking to control mercury and other air toxic pollutants from power plants.
- AB 197 (signed by Governor Brown on September 8, 2016), includes a definition of “social costs” of GHG emissions as:

SEC. 3. Section 38506 is added to the Health and Safety Code, to read: “For purposes of this division, “social costs” means an estimate of the economic damages, including, but not limited to, changes in net agricultural productivity; impacts to public health; climate adaptation impacts, such as property damages from increased flood risk; and changes in energy system costs, per metric ton of greenhouse gas emission per year.”

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