

# Lawrence Berkeley National Laboratory

## Lawrence Berkeley National Laboratory

### **Title**

Federal Tax Incentives for PV: Potential Implications for Program Design

### **Permalink**

<https://escholarship.org/uc/item/4v6710vk>

### **Authors**

Wiser, Ryan  
Bolinger, Mark

### **Publication Date**

2006-03-16

---

# **Federal Tax Incentives for PV**

## **Potential Implications for Program Design**

**Ryan Wiser and Mark Bolinger**

Lawrence Berkeley National Laboratory

**California Public Utilities Commission**

San Francisco, California

March 16, 2006

# Objectives and Caveats

---

## Objectives

- Describe potential implications of Federal solar tax incentives for CSI program design, without advocating for particular changes
- Identify questions that require further research or IRS determination
- Solicit feedback and comments on analysis; and suggested next steps

## Caveats

- We are not tax lawyers ...
- ... but this presentation builds off of work conducted by Ed Ing and Keith Martin (neither has reviewed or commented on this presentation), both with deep expertise in the area
- Open questions remain that can likely only be answered by the IRS

# Key Implications of Federal Tax Law on CSI Program Design: Overall Findings

---

- **Rebate Levels:** New/expanded federal investment tax credits (ITCs) may allow CSI to lower its incentives for some customers
- **Differentiated Incentives:** Because ITC does not currently provide equivalent value to all systems/customers, may want to consider differentiated incentives by customer class, tax status, and project size
- **PBIs vs. CBIs:** PBIs may have many virtues, but PBIs are more tax-efficient than CBIs in only one instance: for corporations, and only if corporations are required to take CBIs as non-taxable contributions to capital
- **Residential Program Admin:** Before moving towards indep. admin. of the residential retrofit market, consider seeking IRS guidance on tax implications; utility-run programs offer considerable tax efficiency gains
- **Financing Programs:** If a financing program is to be developed, try to ensure that it is a non-gov't program (i.e., direct the utilities to offer the program, or seek IRS guidance on gov't admin. options)
- **Low-Income/Affordable Housing Program Design:** May be useful to explore federal tax implications of different program designs

# Presentation Outline

---

- **Overview of Federal Tax Incentives for Photovoltaics**
- **Interaction of State Programs with Federal Incentives**
- **Potential Implications for Program Design**
  - Rebate levels
  - Rebate differentiation
  - Performance-based (PBI) vs. capacity-based incentives (CBI)
  - Residential program administration
  - Value and design of consumer loan programs
  - Design of low-income/affordable-housing programs
- **Open Questions, Seeking Clarification from IRS**

# Federal (and State) Solar Tax Incentives

---

**EPAct 2005 created new, and expanded old, Federal tax incentives:**

- **Commercial:** Section 48 - expanded 30% investment tax credit through 2007 (reverts to old 10% thereafter, unless extended)
- **Residential:** Section 25D - new 30% investment tax credit through 2007 (capped at \$2000)

**Accelerated Depreciation:** 5-year accelerated depreciation (MACRS) allowed for commercial property (and Section 179 allows single-year deduction, within limits)

**California ITC:** California state ITC of 15% (2001 - 2003), dropping to 7.5% (2004 - 2005), for PV projects under 200 kW in size; credit expired at the end of 2005

# Additional Details on Federal ITC

---

## Section 48

- **Resource:** PV, CSP, solar heating/cooling, solar lighting (no pool heating, and no passive solar)
- **Vintage:** Property must be new
- **Ownership:** Utility ownership not allowed unless utility uses “normalization” method of accounting, meaning that shareholders keep ITC, and do not pass savings to ratepayers
- **Tax Liability:** Cannot reduce regular tax by more than 75% or below AMT (whichever is greater)
- **Carryforward/Carryback:** ITC can be carried back one year, and carried forward 20 years
- **Recapture:** Ineligible use of property within first 5 years can result in recapture of portion of ITC
- **At-Risk Rules:** Can reduce tax basis when use non-recourse loan, but not likely to be triggered in vast majority of cases for solar ITC

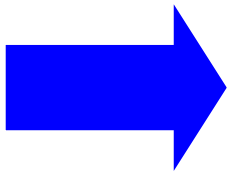
## Section 25D

- **Resource:** PV and solar water heating used in dwelling units (no pool heating, and no passive solar)
- **Vintage:** Property must be new (only applicable when equipment is originally installed)
- **Tax Liability:** Cannot reduce regular income tax below AMT (though Congress suspended this disallowance from 2002-2005)
- **Carryforward:** ITC can be carried forward (maybe only through 2007), but not back
- **Recapture:** Ineligible use of property within first 5 years can result in recapture of portion of ITC
- **At-Risk Rules:** Can reduce tax basis when use non-recourse loan, but not likely to be triggered in vast majority of cases

# Federal Tax Incentives Should Impact How States Think About...

---

- Rebate levels
- Rebate differentiation (by customer class, tax status, size)
- PBIs vs. CBI (or other variants of up-front incentives)
- Residential program administration
- Value and design of consumer loan programs
- Design of low-income/affordable-housing programs



All of these issues are deeply affected by the taxation of state incentives and (more generally) the interaction of state programs with federal tax incentives



# Overview of Presentation

---

- Overview of Federal Tax Incentives for Photovoltaics
- **Interaction of State Programs with Federal Incentives**
- Potential Implications for Program Design
  - Rebate levels
  - Rebate differentiation
  - PBI vs. CBI
  - Residential program administration
  - Value and design of consumer loan programs
  - Design of low-income/affordable-housing programs
- Open Questions, Seeking Clarification from IRS

# Taxation of State Rebates and Interaction with Federal Credits

---

Taxable rebates **do not** reduce tax “basis” (i.e., the amount to which federal credits and depreciation apply)

- A taxable rebate will therefore not reduce the availability of federal tax incentives

Non-taxable rebates **do** reduce tax basis:

- For example, a non-taxable rebate covering 50% of system costs **cuts in half** the value of the federal credit and depreciation

See: Conference Report to the Crude Oil Windfall Profits Tax Act of 1980, which states that: “under present law...if property is financed with nontaxable government grants, the tax basis in the property, for such purposes as depreciation and investment credits (including energy investment credits), is reduced to the extent that the property is financed with such grants... grants which are taxable are not taken into account under these [credit offset] rules because their taxation serves as a partial offset; similarly, credits against State and local income taxes are not taken into account because the deductibility of these taxes under the Federal income tax implies that the effect of these credits is equivalent to the effect of a taxable grant.”

# Residential & Commercial Systems Are Impacted Differently

---

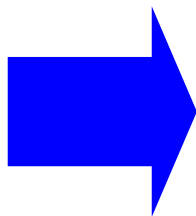
## Commercial

- **\$2.8/W** taxable rebate equates to **\$3.97/W** non-taxable rebate (because depreciation and federal ITC reduced by non-taxable rebate)

## Residential

- **\$2.8/W** taxable rebate equates to **\$2.06/W** non-taxable rebate (because no depreciation for residential systems, and federal ITC likely capped out)

*(See supplemental slides for economic analysis assumptions)*



Program administrators and the PV community should prefer **taxable commercial** incentives and **non-taxable residential** incentives

# Impact on Federal Tax Incentives of Offering Rebate to the System Retailer

---

**Tax liability (or exclusion from tax liability) associated with a grant always rests with the system owner (the intended recipient), and cannot be avoided by shifting the rebate to the system seller or some other third party**

**If taxable rebate is provided to retailer, then both the retailer and the owner should pay tax on that rebate, while the owner's taxable basis for federal tax incentives will equal the pre-rebate total installed cost**

**If non-taxable rebate is provided to retailer, then retailer pays tax on that rebate and the owner does not, while the owner's taxable basis for federal tax incentives will equal the post-rebate total installed cost**

See: (1) *Sparkman v. Commissioner*. TC Memo 2005-136, at 1089 (June 13, 2005); (2) House Conference Report 102-1018, Energy Policy Act of 1992 (October 5, 1992), pages 396-397, related to Section 136 utility energy conservation subsidies.

# Are Rebates Taxable?

## High-Level Summary of Key Recent Findings

---

The internal revenue code makes clear that rebates are taxable unless they are statutorily excluded from gross income, or qualify as one of the following:

- 1) Rebate of purchase price:** manufacturer or dealer must *provide* (not just pass through) the rebate, and amount must be *based on the purchase price*
- 2) Government social welfare payment:** must be based on recipient's *established need*
- 3) Contribution to the capital of a corporation:** applies only to corporations, and recipient must *bargain for* the grant
- 4) Utility energy conservation subsidy (residential):** programs that qualify may need to be *administered* by a utility (not just use utility funds)

# 1) Rebate of Purchase Price

---

**Certain reductions in the purchase price of an asset may be considered non-taxable:**

- The rebate must be based on the purchase price of the item;
- The manufacturer or dealer must be the party offering the rebate; and
- The recipient must be able to negotiate or renegotiate the purchase price in an arms-length transaction

**Most PV programs fail to meet the first two requirements:**

- Grants are based on system size (e.g., \$/W) rather than purchase price
- In cases where PV programs provide grants to system retailers or installers, who pass them through to system owners in the form of a reduced purchase price, the grant is still considered to be from the PV program (the retailer or installer would not have reduced the purchase price without having received the grant)

## 2) Government Social Welfare Payment

---

- While broadly defining taxable income to cover government grants, the IRS as a matter of public policy has created an exclusion for government welfare payments to individuals
- In order to be non-taxable, however, such payments must be based on the recipient's *established need*
- Exclusion applies whether payments are made **directly** to qualifying individuals or **indirectly** to third parties on behalf of qualified individuals
- Question: Need the program be “legislatively provided” and administered by a “governmental” entity to qualify?

# 3) Contribution to the Capital of a Corporation

---

Section 118 of the US tax code treats certain payments to corporations (and only corporations – not partnerships or LLCs) as “contributions to capital,” which are considered to be *non-taxable*

To qualify as a contribution to capital, a payment must:

- Become a permanent part of recipient’s working capital
- Be intended to further a broad public benefit
- Not be compensation for specific, quantifiable services
- Be bargained for
- Benefit the recipient in an amount commensurate with its value
- Ordinarily be used to generate additional income

Do PV grants qualify as contributions to capital?

- Maybe, though – at a minimum – they are not “bargained for”...
- Remember that corporations are better off if PV grants are taxable

See: (1) General Counsel Memorandum 37354 (December 21, 1977); (2) Private Letter Ruling 9401035 (October 14, 1993); (3) *Edwards v. Cuba Railroad Co* (268 U.S. 628, 1925); (3) *Detroit Edison Co.* (319 U.S. 98, 1943); (4) *U.S. v. Chicago, Burlington & Quincy Railroad* (412 U.S. 401, 1973); (5) Kimberly S. Blanchard, 1999, “The Taxability of Capital Subsidies and Other Targeted Incentives”



# 4) Utility Energy Conservation Subsidy

---

Section 136 excludes from taxable income “the value of any subsidy provided (directly or indirectly) by a public utility to a customer for the purchase or installation of any energy conservation measure”

- “energy conservation measure” defined as “any installation or modification primarily designed to reduce consumption of electricity or natural gas or to improve the management of energy demand with respect to a dwelling unit”
- This covers some solar energy systems, presumably including PV systems, and Section 136 only applies to residential customers

What does “provided (directly or indirectly) by a public utility” mean?

- Early IRS rulings could suggest that the *source* of a program’s funds characterize the program (e.g., a utility-funded program would be considered a utility program)
- Subsequently, however, the IRS indicated that a subsidy administered by a governmental unit would be treated as a government program *whatever the funding source* (e.g., only utility-administered programs qualify under Section 136)

Considerable uncertainty remains (and may require IRS guidance):

- What types of administration qualify as a “utility program” under Section 136?
- Could PBIs potentially fall under Section 136?

See: (1) Revenue Ruling 81-52; (2) Revenue Ruling 83-145; (3) Private Letter Ruling 8342047 (July 18, 1983); (4) Private Letter Ruling 8530004 (April 30, 1985)

# Impact of PBIs and State Tax Incentives on Federal Tax Incentives

---

**PBIs will typically be taxable at the federal level, with two possible exceptions:**

- A PBI provided by a utility may qualify as a utility conservation subsidy (much like a CBI), but tax law in this area is not clear
- A PBI may qualify as a social welfare program, in certain limited situations (as would a CBI)

**California state tax credits will not reduce the federal ITC or accelerated depreciation**

# Impact of State and Federal Incentives on State Tax

---

- **CBIs are specifically exempt from state taxes under Section 17138.1 of the California Revenue and Taxation Code (we assume, therefore, that they also reduce the basis for state tax purposes)**
  - Whether PBIs will also be exempt from state taxes is unclear, given a lack of clarity in Section 17138.1
- **California state tax credit applies after deducting the value of any other municipal, state, or federal financial incentives (this would apply to state CBIs)**
  - Whether the federal ITC must be deducted for this purpose is unclear

# What Does It All Mean?

## Standard Residential Installations

---

Taxability of incentives hinges on whether program can be defined as a utility energy conservation subsidy

<u>Program Funding and Admin.</u>	<u>CBI</u>	<u>PBI</u>
Governmental funding and administration	Taxable	Taxable
Governmental admin. and utility funding	Likely Taxable	Likely Taxable
Indep. admin., utility funding, PUC oversight	?	?
Utility funding and administration	Non-Taxable	?

***Remember: We'd like residential incentives to be non-taxable!***

# What Does It All Mean?

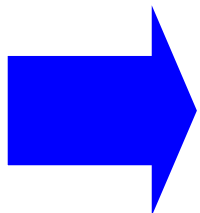
## Standard Commercial Installations

---

**PBIs** for standard commercial installations appear to be taxable at the federal level in all instances

**CBIs** for standard commercial installations appear taxable at the federal level in all instances, except corporations (and only corporations – not LLCs or partnerships) may be able to argue that CBIs are a contribution to capital, and are therefore non-taxable

But, because the definition of a contribution to capital is unsettled in the case of PV incentives, and because taxable rebates are preferable (at least for commercial customers with tax liability), why would a commercial customer want to make that case?



**Despite what may be current practice in the industry, in most instances PBIs and (likely) CBIs can be considered taxable: that's good news!**

# Overview of Presentation

---

- Overview of Federal Tax Incentives for Photovoltaics
- Interaction of State Programs with Federal Incentives
- **Potential Implications for Program Design**
  - Rebate levels
  - Rebate differentiation
  - PBI vs. CBI
  - Residential program administration
  - Value and design of consumer loan programs
  - Design of low-income/affordable-housing programs
- Open Questions, Seeking Clarification from IRS

# The Impact of the New ITC on Rebate Levels and Rebate Differentiation

---

New (residential) and expanded (commercial) Federal ITCs available from January 2006 through December 2007 should allow a reduction in rebate levels, all else being equal.

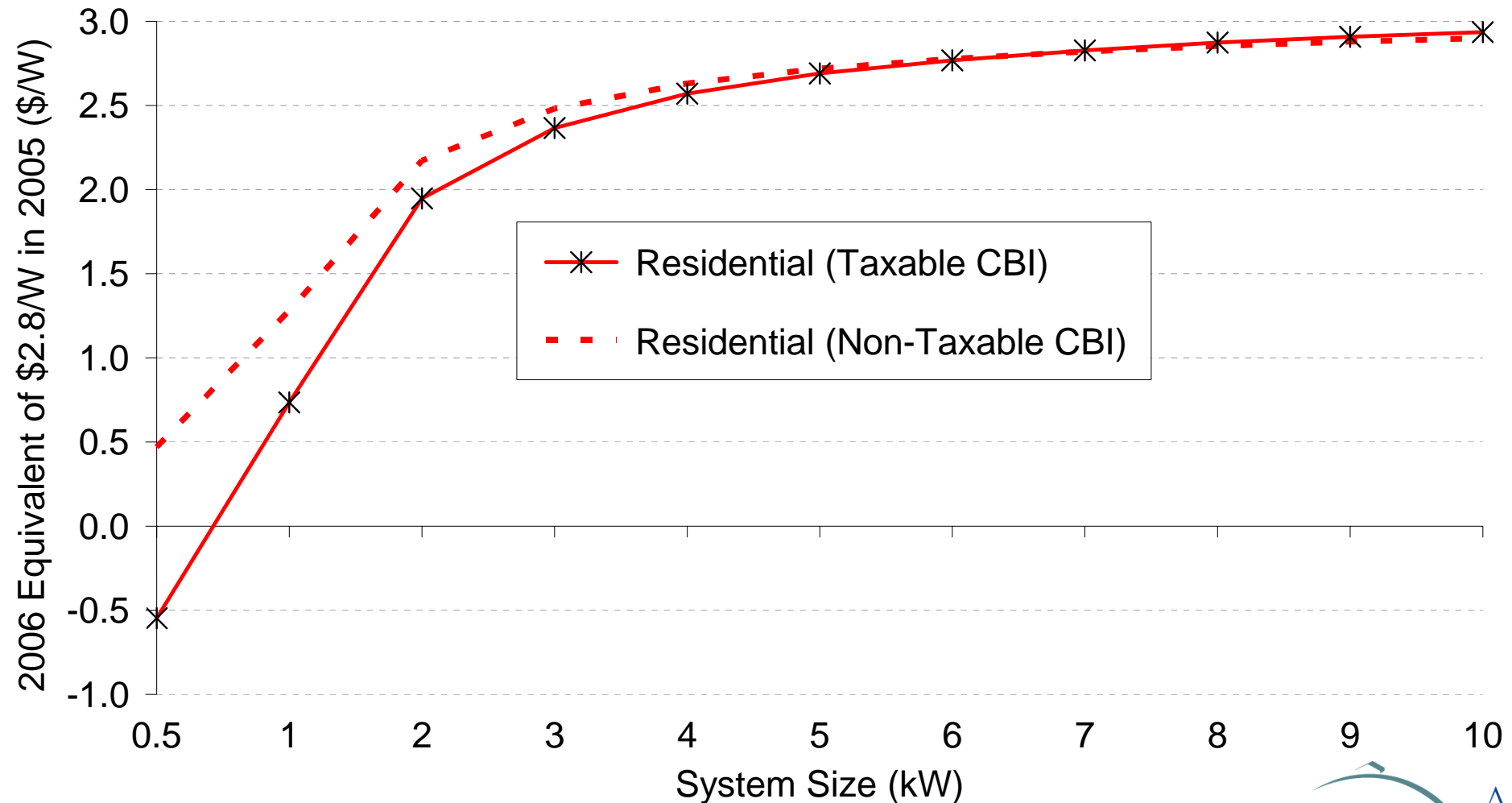
But... also need to accommodate the fact that the state's ITC expired at the end of 2005

Assuming that customers can take full advantage of federal tax incentives and that they consider PV investments on an after-tax NPV basis, the following four slides show:

- The 2006 rebate levels in California that would be equivalent (on the basis of after-tax customer NPV) to \$2.8/W in 2005
- The 2005 rebate levels in California that would be equivalent (on the basis of after-tax customer NPV) to \$2.8/W in 2006

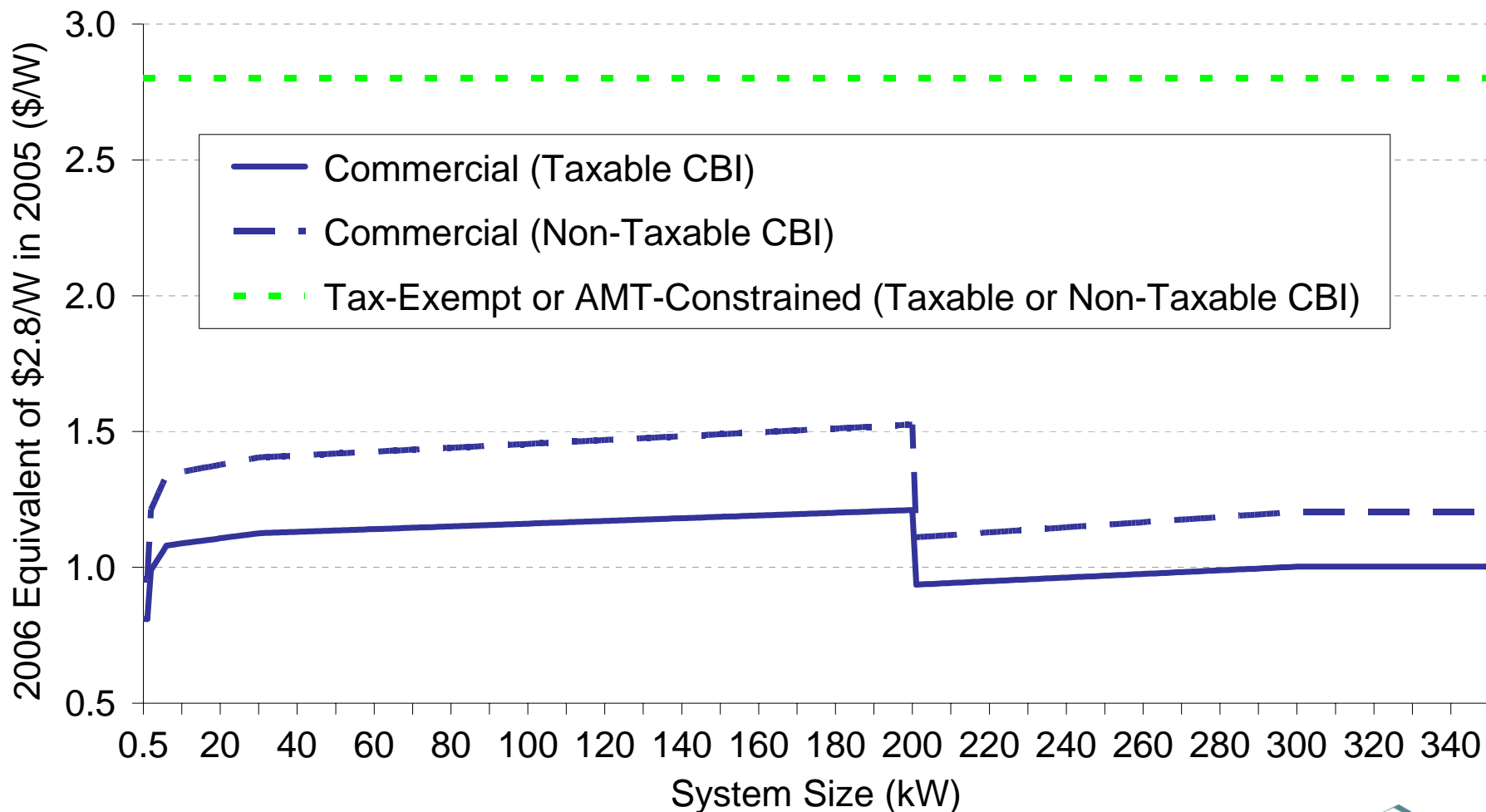
***(See supplemental slides for economic analysis assumptions)***

# 2006 Rebate Levels That Are Equivalent to \$2.8/W in 2005: Residential

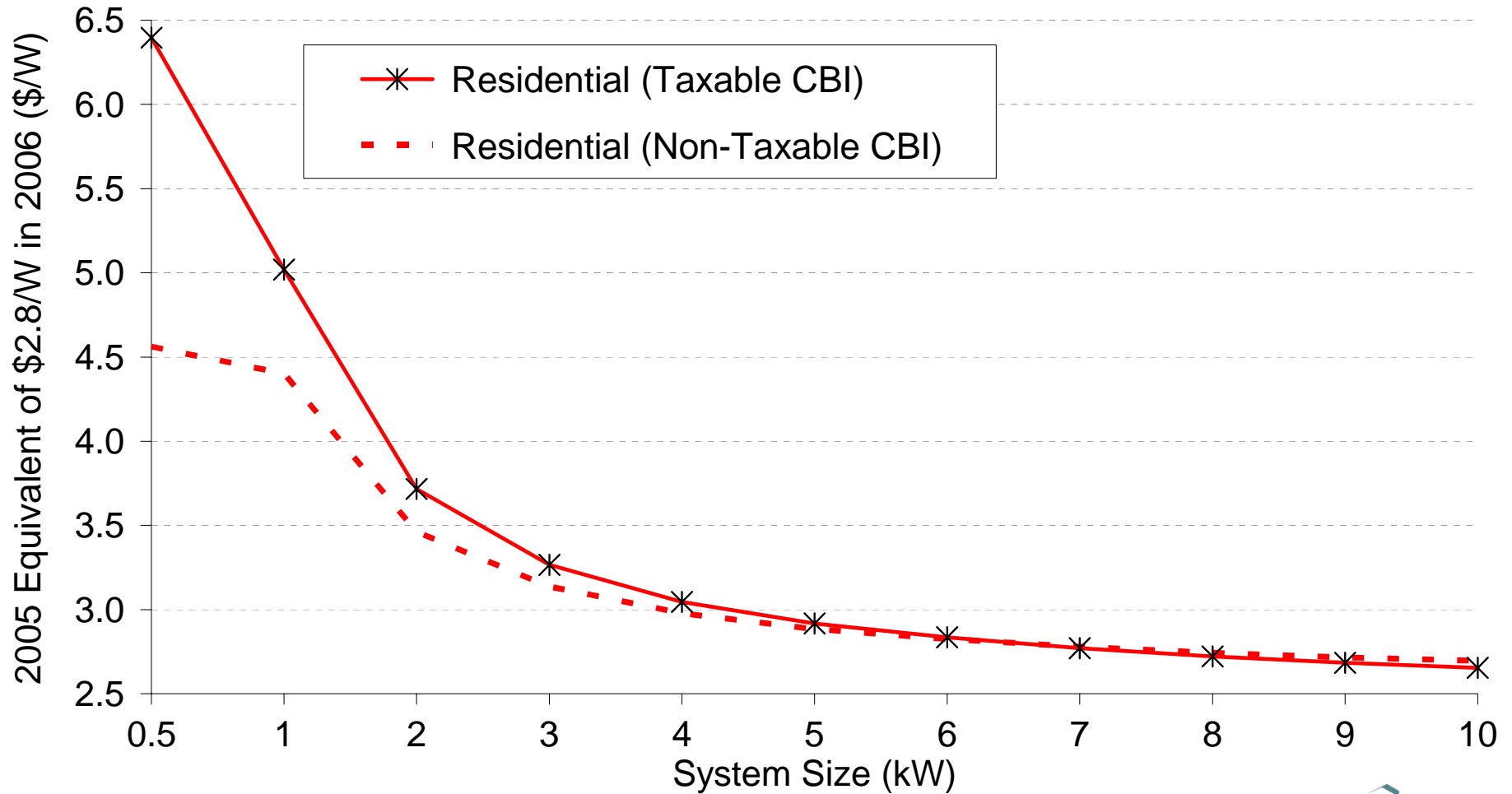




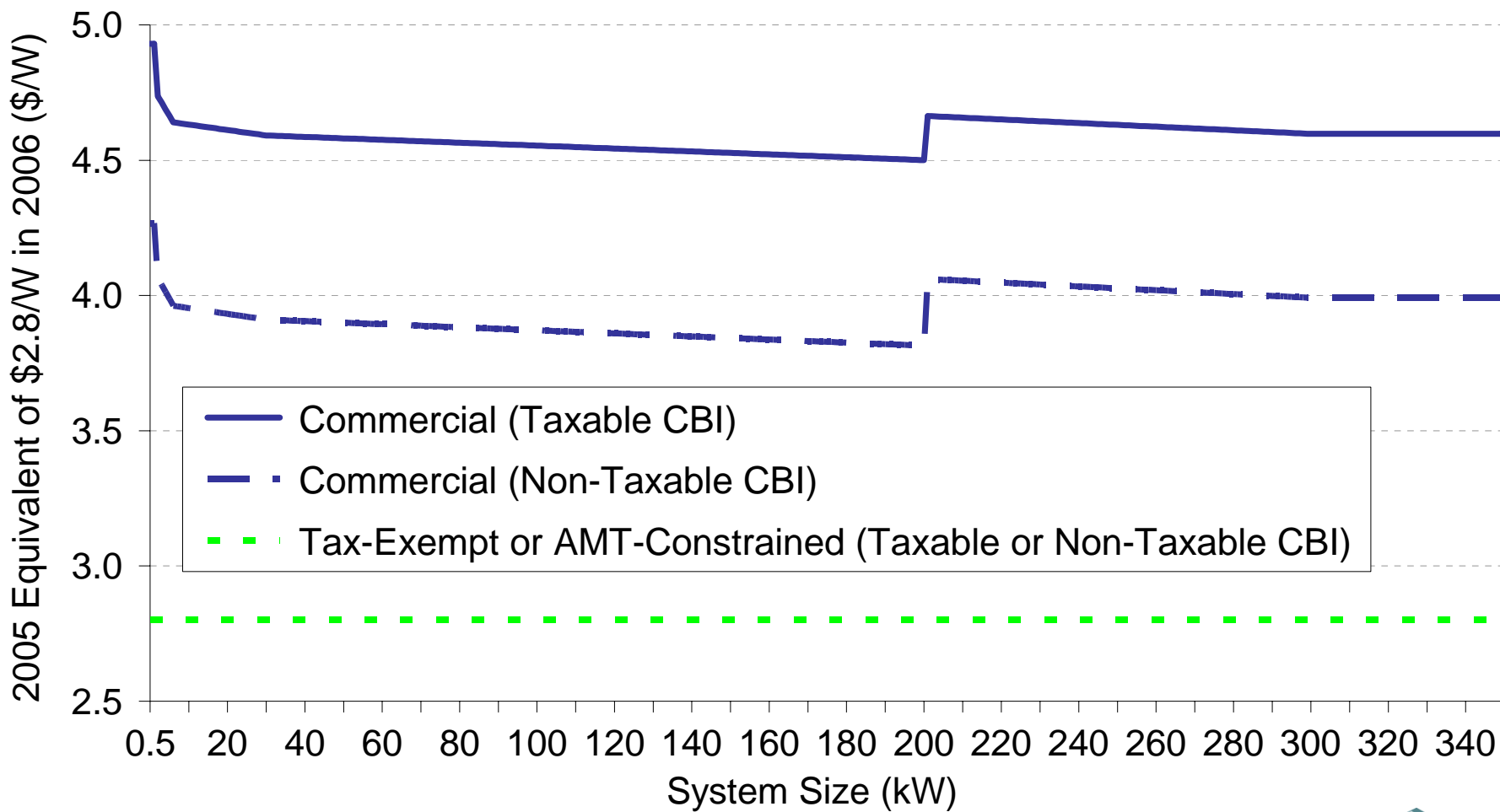
# 2006 Rebate Levels That Are Equivalent to **\$2.8/W** in 2005: Non-Res.



# 2005 Rebate Levels That Are Equivalent to \$2.8/W in 2006: Residential



# 2005 Rebate Levels That Are Equivalent to \$2.8/W in 2006: Non-Res.



# Potential Program Implications: Rebate Levels

---

Current \$2.8/W with new/expanded federal ITC appears to provide richer incentives than offered in the past under the CPUC's program, for some customers:

- **Commercial Owners:** Sizable reductions in rebate levels across *all* system sizes may be possible
- **Residential Owners:** Sizable reductions in rebate levels to *small* systems only may be possible
- **Tax-Exempt Owner:** Any reduction in rebate will hurt PV economics (but we expect far more third-party owned systems to accommodate)
- **Commercial Owners with Limited Tax Liability:** Any reduction in rebate will hurt PV economics (expect far more third-party ownership)

Suggests that rebate reductions may be possible for some customers, but not for all customers

---

# Potential Program Implications: Rebate Differentiation

---

There are legitimate concerns with rebate differentiation, but given federal incentives, without some differentiation program may be:

- Dominated by commercial over residential systems
- Gain some tendency towards smaller residential systems
- See huge proliferation of third-party ownership for tax-exempt entities and AMT-limited taxable entities

Differentiation may be appropriate by:

- **Customer Class:** larger rebate reductions for commercial than for residential
- **Tax Status:** no rebate decrease for tax exempt or perhaps AMT-limited entities
- **Project Size:** rebate reduction only for smallest residential systems

# What Other States Have Done...

---

## New Jersey

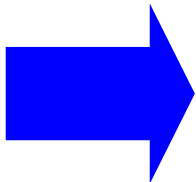
- CBIs reduced by \$0.8-1.10/W, depending on system size, for residential and commercial customers
- Tax exempt entities, and corporations that can document an inability to use the federal ITC, are subject to more modest cuts (\$0.15-0.20/W)

## Energy Trust of Oregon

- CBIs reduced by ~\$1/W across the board, driven by Federal ITC and by increased state tax credits

## Wisconsin

- Eliminated grants for systems under 0.5 kW
- Reduced grants by \$0.50/kWh of estimated production (~\$0.65/W) for other recipients, except for tax-exempt entities



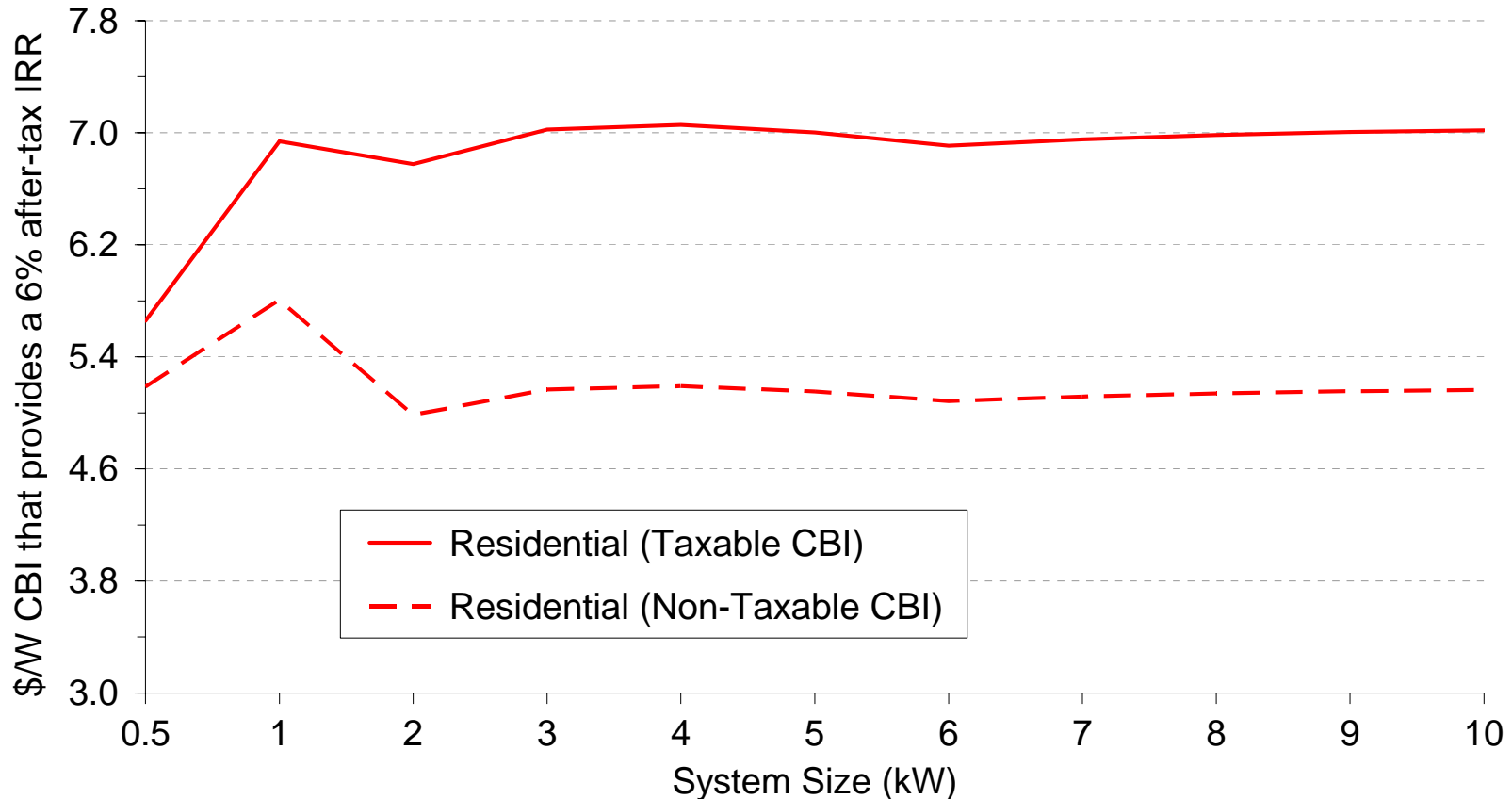
**No state has altered its incentives to the degree the previous analysis suggests may be possible.**

# Potential Countervailing Factors

---

- Incentives offered in 2005-06 do not consistently provide commercial and especially residential owners a positive NPV, at least with our model assumptions (see next 2 slides)
- Desire to increase demand for PV above historical (pre-EPAAct) levels
- Recent increase in module costs (silicon shortage; ~\$0.40/W)
- View that tax incentives will not motivate customers to the degree that cash rebates will
- New and expanded federal tax credits will expire/revert at end of 2007 (unless extended), and may change over time (altering incentives based on the moving target of federal tax credits may be difficult)
- Differentiating incentives by system size or type of owner could increase administrative costs

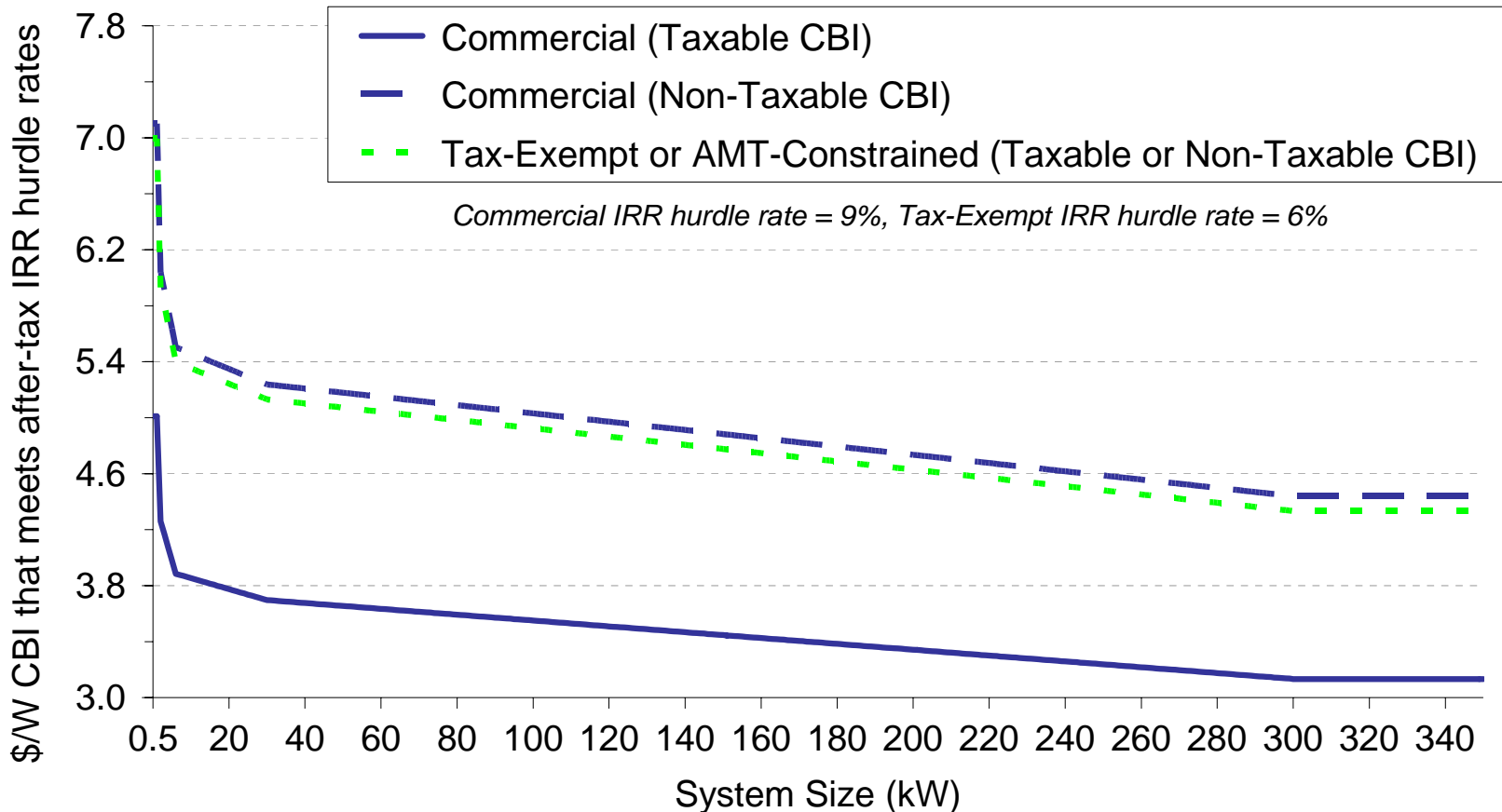
# 2006 CBIs Needed to Provide Residential Customers a 6% IRR



Based on model assumptions listed in supplemental slides. Suggests that:  
(1) model assumptions are overly conservative, and/or (2) current CBI levels are too low to motivate customers on economics alone.



# 2006 CBIs Needed to Provide Commercial/ Institutional Customers IRRs of 9%/6%



Based on model assumptions listed in supplemental slides. Suggests that:  
(1) model assumptions are overly conservative, and/or (2) current CBI levels are too low to motivate customers on economics alone.

# Overview of Presentation

---

- Overview of Federal Tax Incentives for Photovoltaics
- Interaction of State Programs with Federal Incentives
- Potential Implications for Program Design
  - Rebate levels
  - Rebate differentiation
  - **PBI vs. CBI**
    - Residential program administration
    - Value and design of consumer loan programs
    - Design of low-income/affordable-housing programs
- Open Questions, Seeking Clarification from IRS

# Potential Program Implications: PBIs vs. CBIs

---

**Previous analyses sometimes assumed PBIs are more tax-efficient than CBIs, leading to significant program savings**

- Predicated on belief that CBIs decrease tax basis on which Federal ITC and accelerated depreciation are based, but that PBIs do not

**Commercial:** Current analysis shows there is only one general instance in which PBI tax advantages may exist for commercial installations

- Corporations that treat PV incentives as a contribution to the capital of the corporation, and therefore treat CBIs as non-taxable
- Despite what may be current practice, it is not clear why a corporation would choose to do this, and it may not be permissible to do so

**Residential:** Current analysis suggests that for residential customers, PBIs will never be more tax-efficient (and if the CBI is non-taxable but the PBI is taxable, CBI will be much more tax-efficient – the treatment of PBIs under Section 136 is unclear)

# In Most Instances, CBIs Are Not Likely to Be More Tax Efficient than PBIs

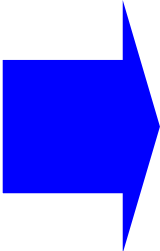
---

Ignoring the impact of CBIs and PBIs on system performance – an important oversight – in general, use of NPV-equivalent PBIs will increase policy costs

- Customer discount rate > government discount rate
- CBIs non-taxable at state level; PBIs may be taxable

If corporations are *required* to treat CBIs as non-taxable contributions to capital under Section 118, however, then NPV-equivalent PBIs may save administrators 12-20% compared to CBIs

If residences are *required* to take PBIs as taxable (but CBIs are non-taxable due to utility program), then NPV-equivalent PBIs may cost administrators 39-53% compared to CBIs



Unless it can be **proven** that corporations are **required** to take CBIs as non-taxable contributions to capital, then **CBIs are not more tax-efficient** than PBIs, and may be less tax-efficient.

This is not to say that PBIs aren't warranted, but only that the purported benefit of tax efficiency is unproven.

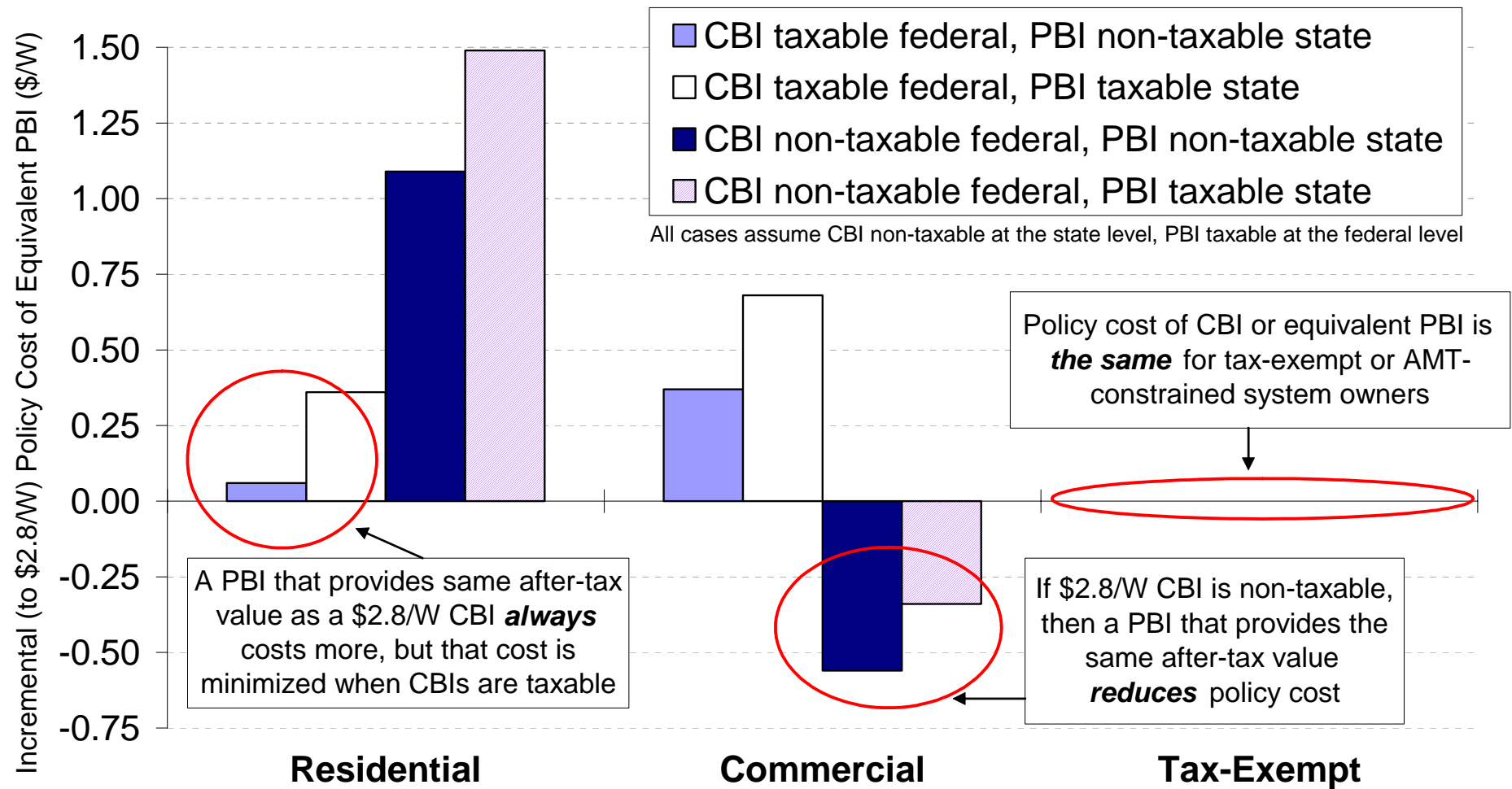
# Unless CBIs Are Non-Taxable (commercial), the Tax Advantages of a PBI Are Not Significant

\$2.80/W CBI

		\$2.80/W CBI			
		Residential		Commercial	
		Taxable	Non-Taxable	Taxable	Non-Taxable
Equivalent 10-Year Fixed PBI (\$/kWh)	Federal: State:	Non-Taxable	Non-Taxable	Non-Taxable	Non-Taxable
	Taxable Federal, Non-Taxable State	0.26	0.36	0.29	0.21
	Non-Taxable Federal Non-Taxable State	N/A	0.26	N/A	N/A
	Taxable Federal, Taxable State	0.29	0.40	0.32	0.23
Equivalent PBI Policy Cost (\$/W)	Non-Taxable Federal Taxable State	N/A	0.28	N/A	N/A
	Taxable Federal, Non-Taxable State	2.86	3.89	3.17	2.24
	Non-Taxable Federal Non-Taxable State	N/A	2.80	N/A	N/A
	Taxable Federal, Taxable State	3.16	4.29	3.48	2.46
	Non-Taxable Federal Taxable State	N/A	3.00	N/A	N/A



# Unless CBIs Are Non-Taxable (commercial), the Tax Advantages of a PBI Are Not Significant



# Overview of Presentation

---

- Overview of Federal Tax Incentives for Photovoltaics
- Interaction of State Programs with Federal Incentives
- Potential Implications for Program Design
  - Rebate levels
  - Rebate differentiation
  - PBI vs. CBI
- **Residential program administration**
  - Value and design of consumer loan programs
  - Design of low-income/affordable-housing programs
- Open Questions, Seeking Clarification from IRS

# Residential Program Administration

---

**Remember: \$2.8/W taxable CBI is equal in consumer value to a \$2.06/W non-taxable CBI**

- Non-taxable rebate saves ratepayers 25% compared to taxable
- Suggests that CPUC program should be designed to be non-taxable for residential customers

**CBIs will be non-taxable for residential customers as long as the program can be characterized as a “utility” program**

- CPUC-overseen, utility-administered program: **utility program**
- Independently administered program using utility funds: **treatment not clear!!!**

**PBIs offered by a utility program *may* also be non-taxable, but IRS guidance would likely be needed to confirm**



# Potential Program Implications: Residential Program Administration

---

**Be careful and deliberate as and if the CSI moves towards independent administration of the residential retrofit component**

- Consider seeking IRS guidance on tax implications of different administrative and oversight options
- If PBIs (or quasi-PBIs) are contemplated for residential customers, consider seeking IRS guidance on whether PBIs qualify as non-taxable under Section 136
- If new administrative structure results in taxable incentives (residential), then advantages of independent administration should outweigh the significant tax disadvantages that result

# Overview of Presentation

---

- Overview of Federal Tax Incentives for Photovoltaics
- Interaction of State Programs with Federal Incentives
- Potential Implications for Program Design
  - Rebate levels
  - Rebate differentiation
  - PBI vs. CBI
  - Residential program administration
  - **Value and design of consumer loan programs**
    - Design of low-income/affordable-housing programs
- Open Questions, Seeking Clarification from IRS

# Double-Dipping Rules

---

**Federal ITC includes anti-double-dipping rules that will reduce the ITC due to the receipt of certain forms of other incentives**

- ✓ Non-taxable grants whether from governmental or non-governmental sources, through basis rules
- ✓ Tax-exempt bond financing and subsidized financing: “subsidized energy financing means financing provided under a federal, state, or local program a principal purpose of which is to provide subsidized financing for projects designed to conserve or produce energy.”

**ITC reduced by percentage of installed cost financed by subsidized energy financing: loan for 75% of installed cost results in loss of 75% of ITC (30% → 7.5%)**

**Depreciation is not affected by subsidized financing unless financed by tax-exempt bonds or leased to tax-exempt entity**

# Administrative Structure and Source of Funds Matter for Loan Programs

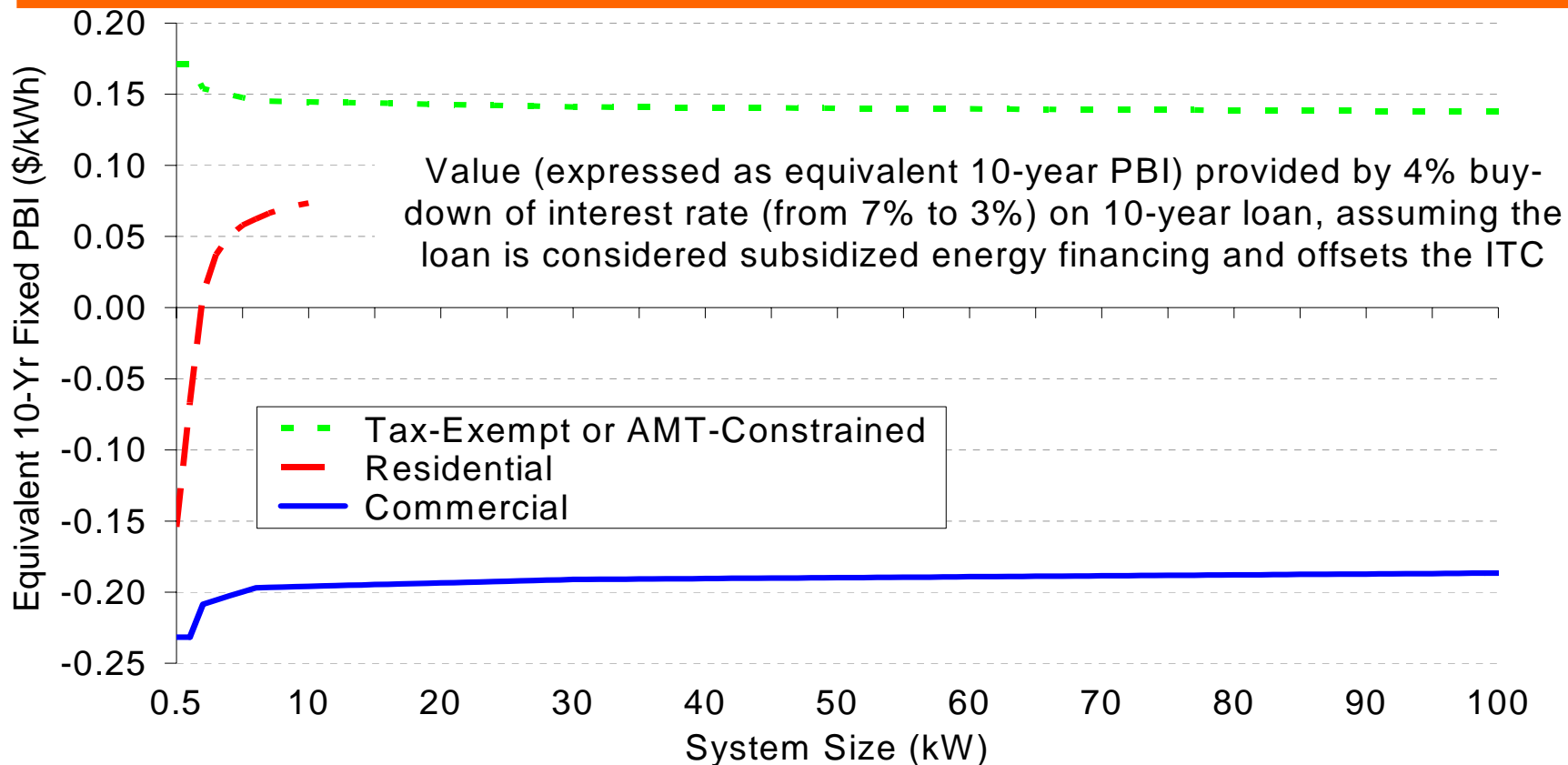
---

**Subsequent rulings, letters, guidance from the IRS show that:**

- ➔ Utility-provided subsidized financing, even if directed by state law or regulation, will not trigger the anti-double-dipping rules so long as funds are collected from ratepayers
- ➔ If the source of the funds is the state (through tax revenue, tax credits, etc.), then the anti-double-dipping provisions will apply regardless of who administers the loan
- ➔ Somewhat unclear as to whether a government-administered program, with funds from utility sources, would trigger the anti-double-dipping provisions or not (1985 PLR suggests yes; earlier rulings suggest no)

See: (1) proposed regulations in 47 Federal Register, No. 17, 3559 (January 26, 1982); (2) Rev. Rul. 81-52, 1981-1, C.B. 9; (3) PLR 8342047 (July 18, 1983); (4) PLR 8432072 (May 8, 1984); (5) PLR 8530004 (April 30, 1985)

# Impact of Anti-Double-Dipping Rules on the Value of a Subsidized Loan Program



PBIs for 7% and 3% loan cases calculated to be equivalent, on a customer-NPV basis, to a \$2.8/W CBI. Graph shows difference between PBI in the 3% loan case to the PBI in the 7% loan case. Both cases assume – aggressively – that the entire capital cost of the project is financed with the loan in question.

# Key Implications:

## If Consumer Loans Are Viewed as Important...

---

**Offer a utility program, in which case anti-double-dipping rules are not triggered and there is no loss of federal tax incentives!!!**

- If program is funded by utility ratepayers, but administered/overseen by governmental body, consider seeking IRS guidance

**If a governmental program that will trigger the anti-double-dipping rules is to be used...**

- 1) Target low-interest loans to customers that can gain the most value from them (because they don't lose tax value): medium to large residential systems; tax-exempt or AMT-limited entities
- 2) Provide loans with beneficial delivery methods, but that are not subsidized: e.g., market-rate utility in-bill financing
- 3) Consider possible role for loan guarantees, price guarantees, price support payments: none of these are classified by the IRS as "subsidized" financing, unless the arrangement is essentially subsidized borrowing

# Overview of Presentation

---

- Overview of Federal Tax Incentives for Photovoltaics
- Interaction of State Programs with Federal Incentives
- Potential Implications for Program Design
  - Rebate levels
  - Rebate differentiation
  - PBI vs. CBI
  - Residential program administration
  - Value and design of consumer loan programs
  - **Design of low-income/affordable-housing programs**
- Open Questions, Seeking Clarification from IRS

# Potential Program Implications: Low-Income Program Administration

---

## Affordable Housing: Commercial System Owners

- Program not likely to fall under government social welfare status because CBI/PBI provided to commercial owner (not individual with need)
- Because taxable CBI is preferable to non-taxable CBI, no value in making case to IRS that CBI may be considered a government social welfare program (if a PBI, the case could be made, but would be tough to win)
- SEIA notes that CBIs (and maybe PBIs) provided to these systems could fall under a Section 136 utility conservation subsidy for “dwelling” units
  - May wish to verify this, and determine whether use of PV to meet needs for common spaces would allow systems to escape Section 136 for dwelling units

## Low-Income Customers: Residential System Owners

- Non-taxable CBI or PBI preferable to taxable: CBI likely non-taxable as utility energy conservation program; if not, or if PBI is used, may wish to design program and make case that program should be considered a government social welfare program (however, this market for PV is likely to be very small; may not be worth the effort)



# What Needs to Be Demonstrated for Government Social Welfare Programs?

---

**Additional research is needed to establish threshold criteria for a credible case to be made - potential criteria include:**

- **Incentives must be need-based:** would have to demonstrate that programs are being used to serve the proven need of individual low-income/needy customers *(and perhaps would need to show that program for low-income customers is somehow unique relative to standard CBI/PBI for other customers)*
- **Incentives may need to be governmental:** legislatively established, and provided by the state
- **Commercial systems owners may not qualify:** may not be eligible for coverage under government social welfare program in any instance

# Overview of Presentation

---

- Overview of Federal Tax Incentives for Photovoltaics
- Interaction of State Programs with Federal Incentives
- Potential Implications for Program Design
  - Rebate levels
  - Rebate differentiation
  - PBI vs. CBI
  - Residential program administration
  - Value and design of consumer loan programs
  - Design of low-income/affordable-housing programs

- **Open Questions, Seeking Clarification from IRS**

# Top-Level Questions that Do Merit Further Research and/or Clarification

---

## **Must corporations consider CBIs a contribution to capital (and therefore non-taxable)?**

- Affects most prominently level of necessary incentives to encourage demand for PV and value/cost/tax-efficiency of PBI relative to CBI
- We want corporations to be able to consider CBIs taxable, so that federal tax advantages are maximized
- Seems unlikely that corporations would voluntarily take CBIs as non-taxable under Section 118, and it is not clear that it is permissible to do so, but rumors that this is current industry practice leaves some doubt...

## **What are the tax implications of alternative residential program administration options?**

- Affects consideration of residential program administration, and value/cost/tax-efficiency of CBIs/PBIs provided to residential customers
- Want CBIs/PBIs to be covered under Section 136 utility conservation subsidy, and therefore be considered non-taxable
- Ideally would be resolved prior to moving towards indep. admin.

# Secondary Questions that May Merit Further Research and/or Clarification

---

- What specific incentives/admin. structures would be deemed to be social welfare programs, and therefore be non-taxable?
- If residential PBIs are considered, are PBIs provided under a utility program taxable at the federal level or not?
- If a government-administered loan program is offered using utility funds, will it trigger the ITC's anti-double-dipping provisions?
- Are PBIs taxable at the California state level, or does Section 17138.1 cover PBIs as well as CBIs?
- Do CBIs (and maybe PBIs) provided to affordable housing systems owned by commercial entities fall under a Section 136 utility conservation subsidy for “dwelling” units?

# Procedures for Seeking IRS Clarification

---

**Clear procedures exist for taxpayers to request advice in the form of letter rulings**

- State agencies are not taxpayers and therefore cannot avail themselves of these specific procedures
- Similarly, IRS will not issue advice to business, trade, industrial associations, and similar groups concerning members' tax issues

**The IRS has provided advice, interpretation, and clarification to states on the interaction of federal tax law with state legislation; guidance can be expedited if circumstances require it**

- Ex: General informational guidance to CEC in 1997 (6 mo. after filing)
- Ex: Rev. Rul. provided to Oregon DOE in 2006 (1.5 years after filing)

# For More Information...

---

Solar Energy Industries Association. 2006. "Guide to Federal Tax Incentives."  
<http://www.seia.org/manualdownload.php>

Bolinger, M. and R. Wiser. Forthcoming. "EPA Act 2005's PV Tax Credits: What Are They Really Worth?" Lawrence Berkeley National Laboratory.

Gouchoe, S., L. Gillette and C. Herig. 2004. "Are Solar Rebates and Grants for Homeowners and Businesses Taxable?" SOLAR 2004.  
[http://www.dsireusa.org/documents/PolicyPublications/Taxability\\_ASES\\_2004.pdf](http://www.dsireusa.org/documents/PolicyPublications/Taxability_ASES_2004.pdf)

Ing., E. 2002. "The Effect of NYSERDA's Wind Project Assistance on the Federal Production Tax Credit." Prepared for NYSERDA.  
[http://www.cleanenergystates.org/library/ny/NYSERDA\\_TaxCred\\_PprWind.pdf](http://www.cleanenergystates.org/library/ny/NYSERDA_TaxCred_PprWind.pdf)


Various revenue and private letter rulings, as well as informational guidance provided to CEC based on 1997 request

---

# Supplemental Slides

# Economic Analysis Assumptions

---

- Installed PV system costs exhibit economies of scale, according to the schedule shown in table 
- Linear interpolation from 2-6 kW, 6-30 kW, 30-300 kW
- First year system performance = 1,500 kWh/kW
  - 17% capacity factor
  - 0.5%/year performance degradation
- 25-year project life

kW	\$/W
0.5	10.00
1	10.00
2	9.00
6	8.50
30	8.25
300	7.50
>300	7.50



# Economic Analysis Assumptions (cont)

---

- First year avoided electricity cost = \$0.15/kWh, with 3% annual escalation
- Annual O&M = 0.5% of pre-rebate installed cost
- Marginal Income Tax Rates: Federal Residential (28%), Federal Commercial (34%), State Residential (9.3%), State Commercial (8.84%)
- PBI Term/Structure: 10-year fixed price
- Nominal Discount Rate: 6% residential and public sectors, 9% commercial
- 100% cash finance, except for subsidized loan analysis
- Loan Terms (for subsidized loan analysis): 10-year term, 7% interest rate (3% for subsidized loan), covers 100% of post-rebate installed cost

# Economic Analysis Assumptions (cont)

---

- Federal depreciation uses 5-year MACRS schedule, 1/2-year convention
- State depreciation uses 12-year straight-line schedule (C-Corp)
- Federal ITC does not reduce basis for state depreciation (based on SDREO fact sheet)
- Federal ITC does not reduce basis for state ITC (uncertain)
- Non-taxable (at federal level) CBI reduces basis for federal ITC; taxable CBI does not
- Subsidized loan reduces basis for federal ITC, but not for federal depreciation
- Electric bill savings represent taxable income to commercial system owners
- Interest payments on all loans are tax-deductible
- State income tax payments are deductible from federal taxable income