

Performance Based Incentives may Better Leverage State Incentives and Result in Significantly More PV Systems than Current Buydown Incentives

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June 14, 2004

This research was partially supported by NREL



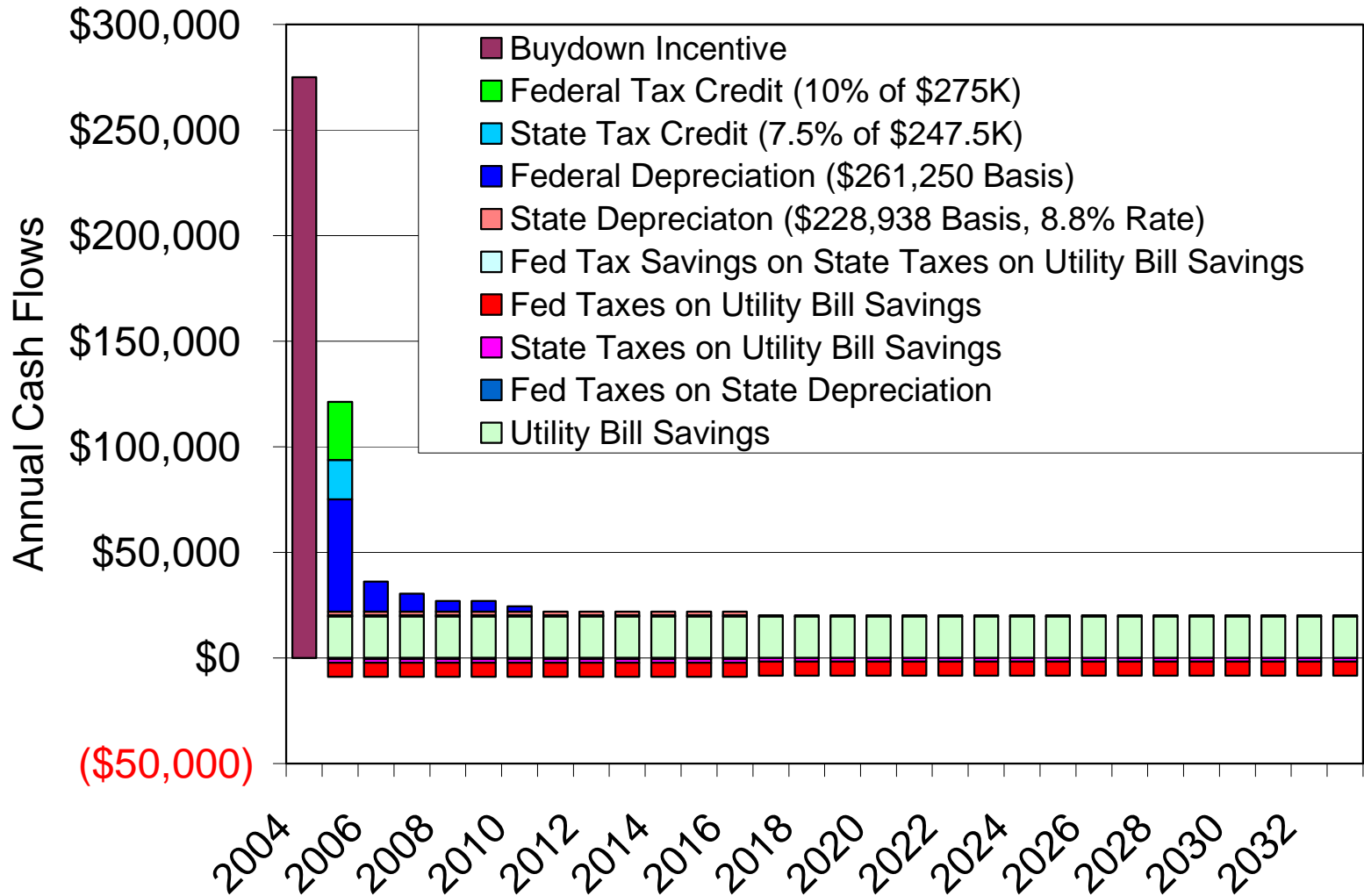
Objective

- The objective of this analysis is to perform a preliminary economic evaluation of the potential effect of a performance based incentive (PBI) in place of the existing CPUC Self-Generation Incentive Program (SGIP) incentive
- The focus of the analysis is on the allocation of incentive funding between the SGIP program, federal government, and state government

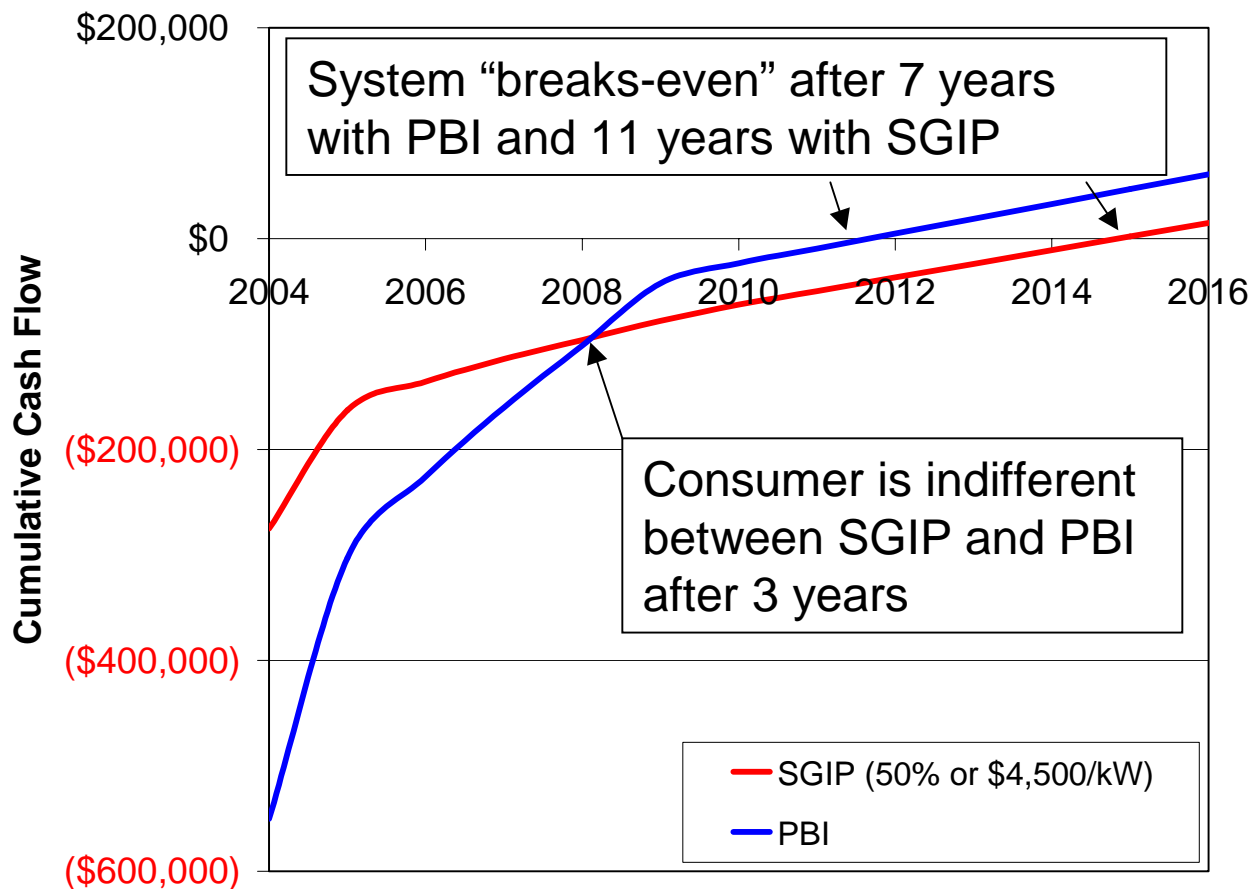
Assumptions

- Analysis is performed for one customer in San Jose, CA
- Commercial customer taxed as corporation
- PG&E E-19S structure with \$100K annual utility bill
- 100 kW_{DC} system (reduces utility bill by 20%)
- \$550K capital cost (before incentives)
- Conservatively assumes no utility bill escalation
- Paid for with cash (i.e., no financing benefits)
- Incentive structures
 - \$4,500/kW or 50% of cost for existing SGIP incentive (has 7% rate of return)
 - 7% rate of return requires 5-yr PBI at
 - \$0.22/kWh (untaxed)
 - \$0.37/kWh (taxed at state and federal levels)
- 7% discount rate
- Analysis performed using NREL's policy analysis tool (uses Clean Power Estimator analysis engine)

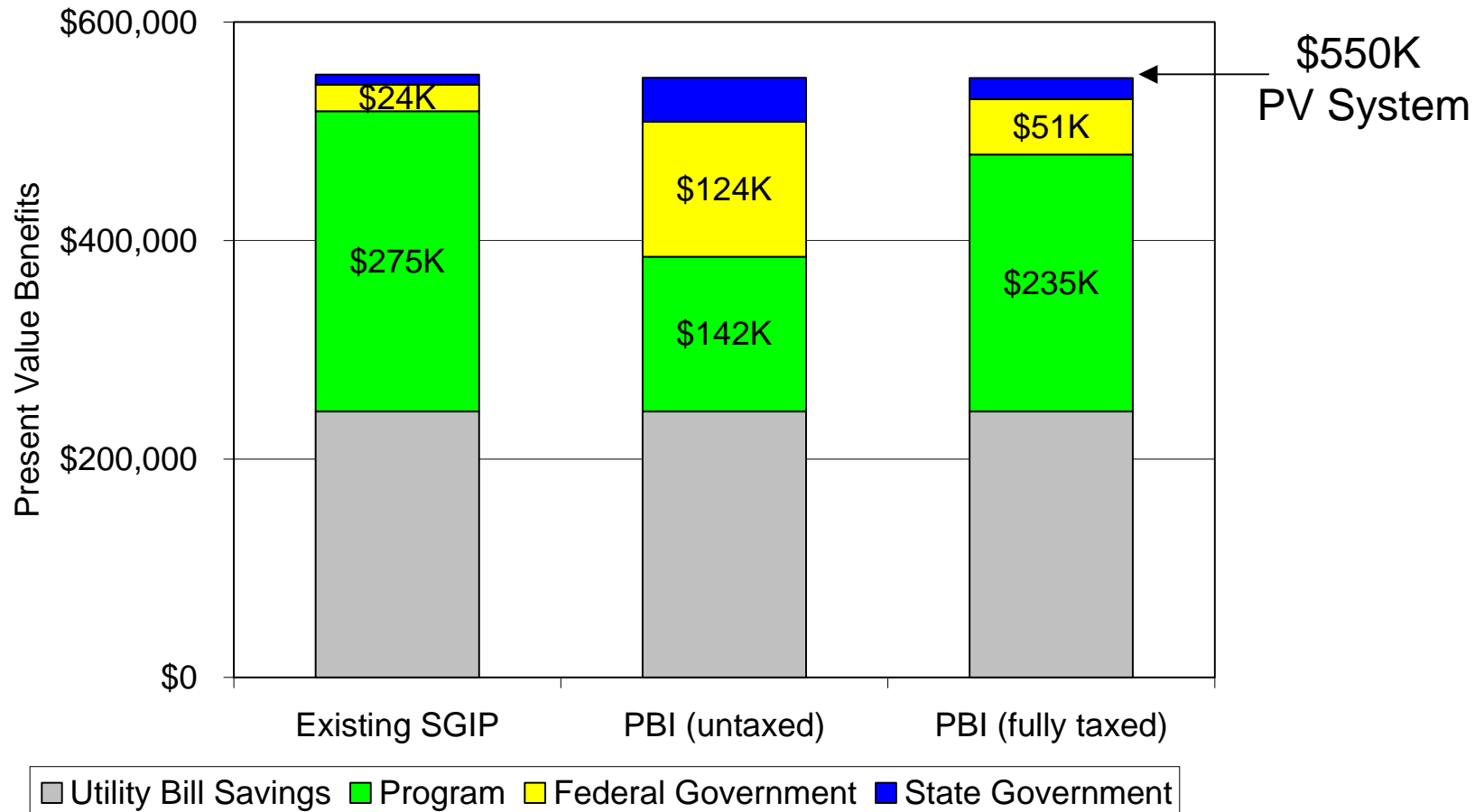
Benefits with Existing SGIP Incentive



Non-Discounted Cumulative Cash Flow (Consumer Perspective)



Distribution of Incentive Costs (Funding Agencies' Perspectives)



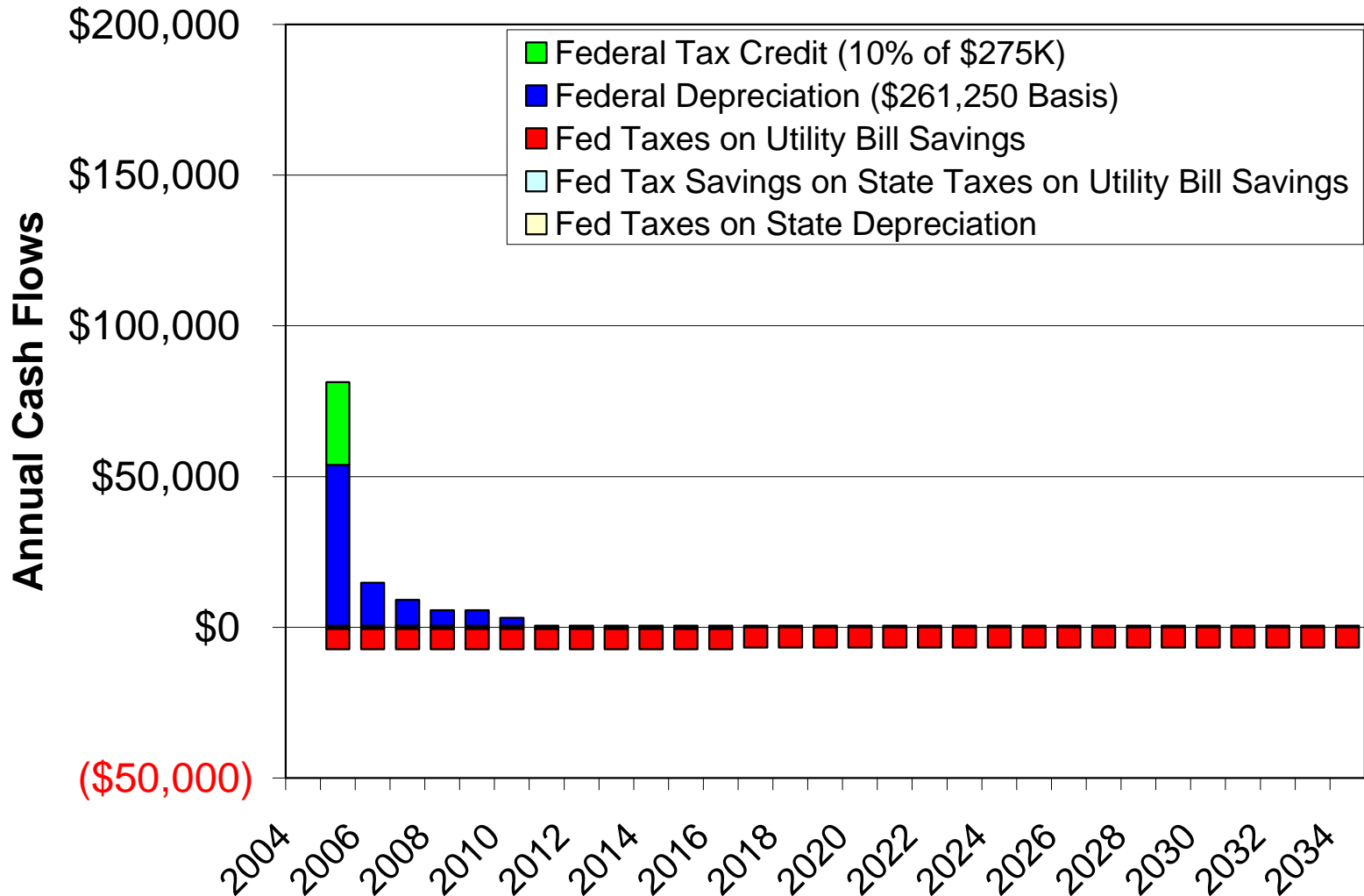
Observations

- Customers receive most of their benefits from utility bill savings and CPUC SGIP incentive
- The existing SGIP incentive results in almost no discounted cost to the federal government over the life of the PV system
- This is due to the fact that, at the federal level, the tax credit and depreciation benefits are offset by increased taxes on decreased utility bills
- An untaxed PBI would more evenly split the incentive cost between the CPUC program and the federal government
- An untaxed PBI may enable a program to install almost twice as many kW of PV for the same total cost
- Even if the PBI is fully taxed at the state and federal levels, the incentive cost to the program may decrease

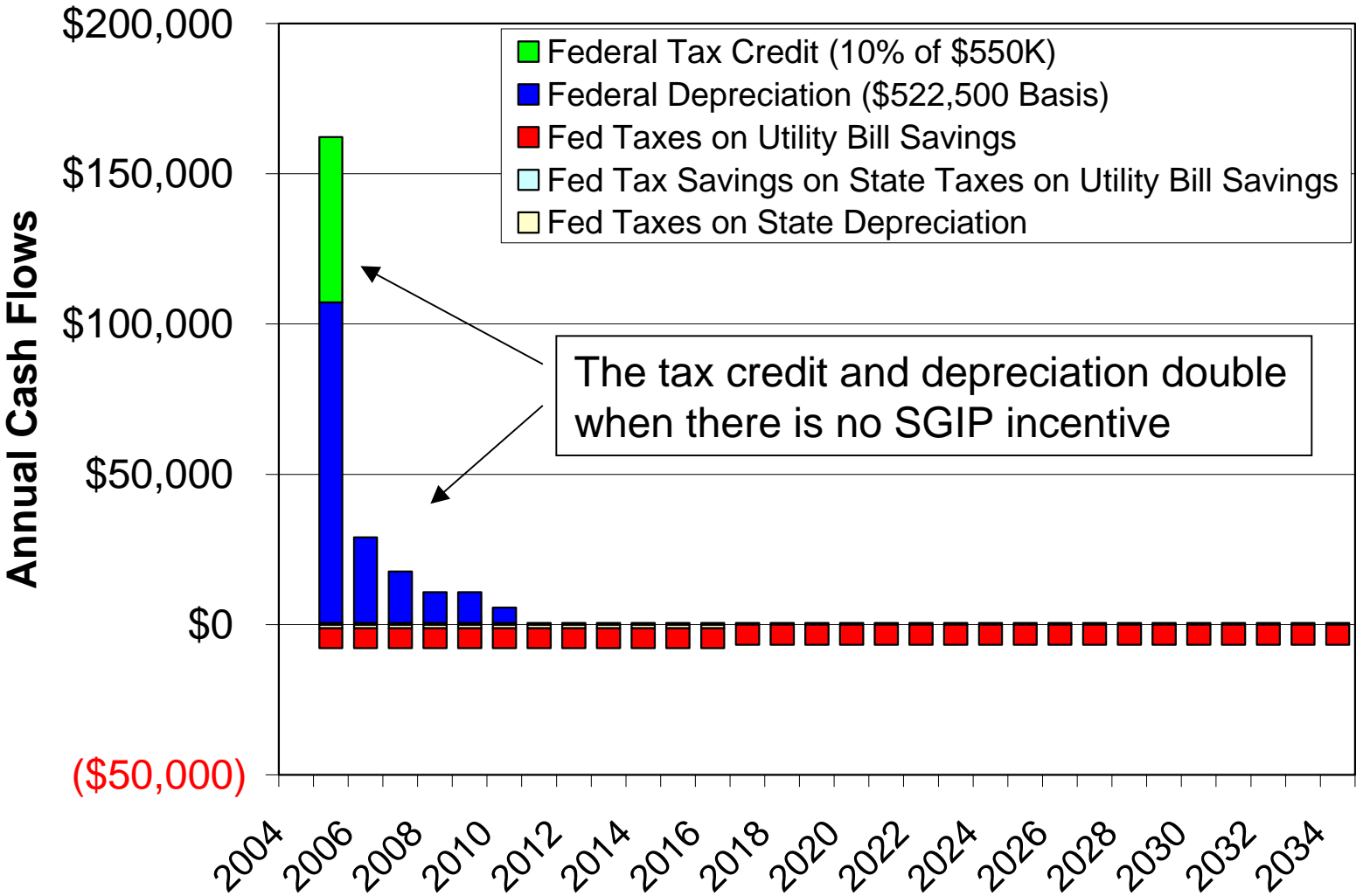
What is the Cause of the Change?

- The next 3 slides present the tax effects at the federal level only of the three alternatives

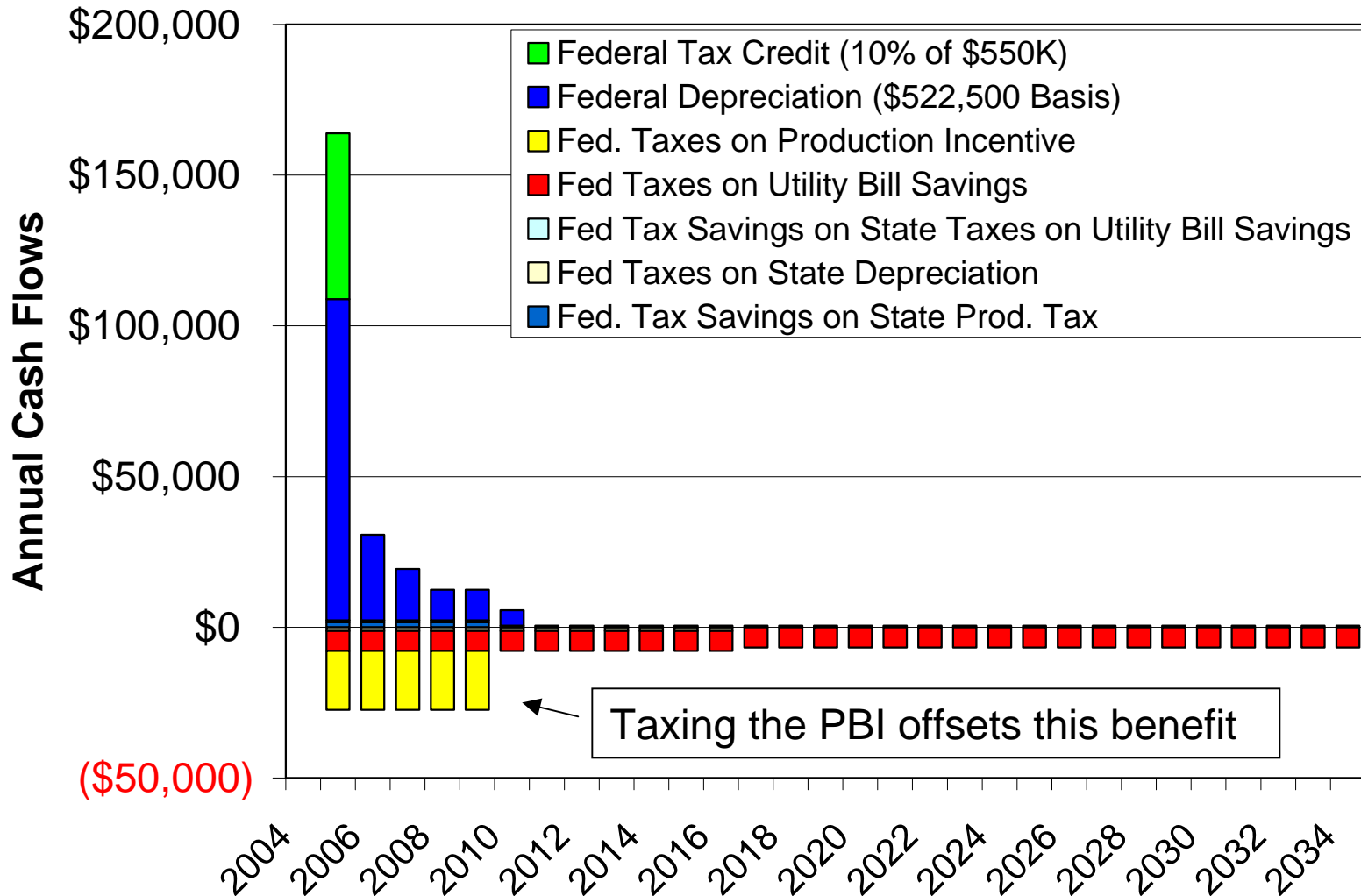
Federal Cash Flows (Existing SGIP)



Federal Cash Flows (Untaxed PBI)



Federal Cash Flows (Taxed PBI)



(\$50,000)

Taxing the PBI offsets this benefit

Conclusions

- PBI's could help more evenly split the cost of incentives between a program (e.g., SGIP) and the federal government, particularly if they are not taxed as revenue
- Adoption of such an incentive structure may enable a program to almost double the amount of PV that is installed for the same cost

Recommendations and Next Steps

- Obtain opinions on the tax treatment of PBIs
 1. Is it correct that the federal tax credit and depreciation do not account for the discounted value of PBIs?
 2. Are PBIs taxed at the state or federal level?
- Confirm the results of this analysis for a wider variety of customers, applications, locations, and scenarios because it is preliminary

Appendix A: Control Mechanism

- Financial market analogy: interest rate
- Clean energy markets could use a PBI to control market activity

Appendix A: Control Mechanism

Weaknesses of Existing Incentive Programs

- Existing programs do not respond quickly to market conditions
 - Incentives that are too high result in too many applications (available funding is exhausted)
 - Incentives that are too low result in too few applications (available funding is unused)
- Unfulfilled applications “clog” the process
- Incentive uncertainty can encourage consumers to wait to invest

Appendix A: Control Mechanism

Sample Implementation

- Offer fixed minimum rate for fixed time period and application expiration date; applicant locks in highest rate until expiration date
- Simple Example (Program Perspective)
 - July 1st
 - PBI is \$0.25/kWh
 - August 1st
 - Too many applications: PBI is \$0.24/kWh
 - Right number of applications: PBI is \$0.25/kWh
 - Too few applications: PBI is \$0.26/kWh
- Simple Example (Participant Perspective)
 - Application is made on July 1st
 - If installation is completed on August 15th
 - and rate went up on August 1st, applicant gets \$0.26/kWh for 5 years
 - and rate stayed same or went down on August 1st, application gets \$0.25/kWh for 5 years
 - If installation is completed after September 1st
 - Applicant has to reapply