Going Solar: Economics of Decision-Making

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How Consumers Value Energy Investments

- Classic approach is to consider discount rate used to value future costs and benefits
- Social factors such as peer influence and networking effects are also important
- Ultimately consumers are unreliable as ‘rational investors’

Data & Methodology

- **Data:** 211 PV installers in Dallas area
  - Applications to claim utility rebate for installed residential system
  - Conducted survey to determine investment decision, demographics, and income.
- **Method:** Built a financial model to calculate expected revenues and costs associated with system ownership

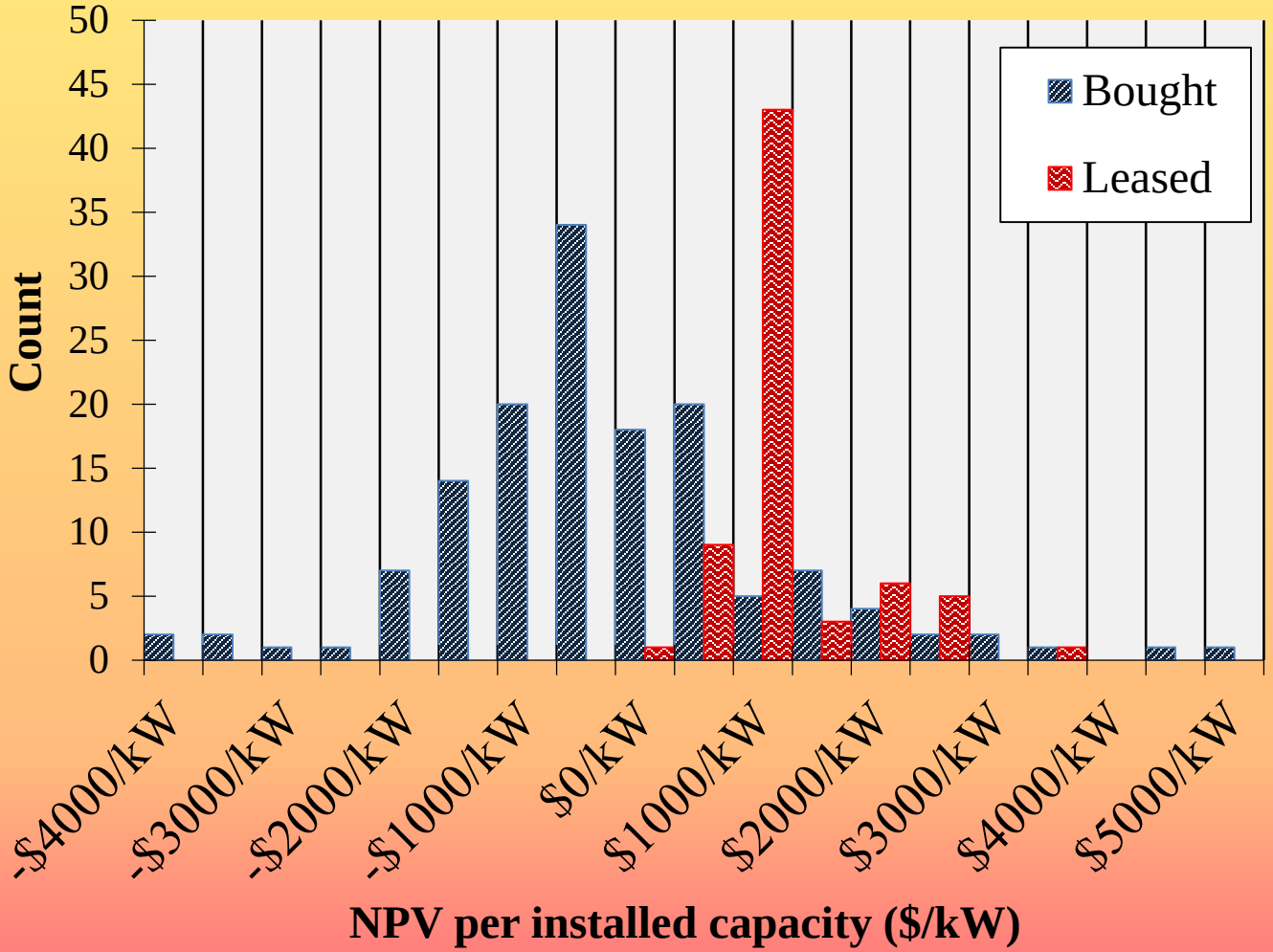
Summary of Model Parameters

	Buyers	Leasers
Sample Size (n)	142	69
Cost after rebates ($/W)	$1.7 – $3.6 / W	$0.57 - $0.82 /W
System life	25 years	15 years
Annual Electricity Consumption	750 – 2750 kWh/month	similar
Cost of Electricity	12¢ -14¢ /kWh	similar
System Size	3.5 – 9.0 DC-kW	similar
Escalation in cost of electricity	0% - 5% per year	same

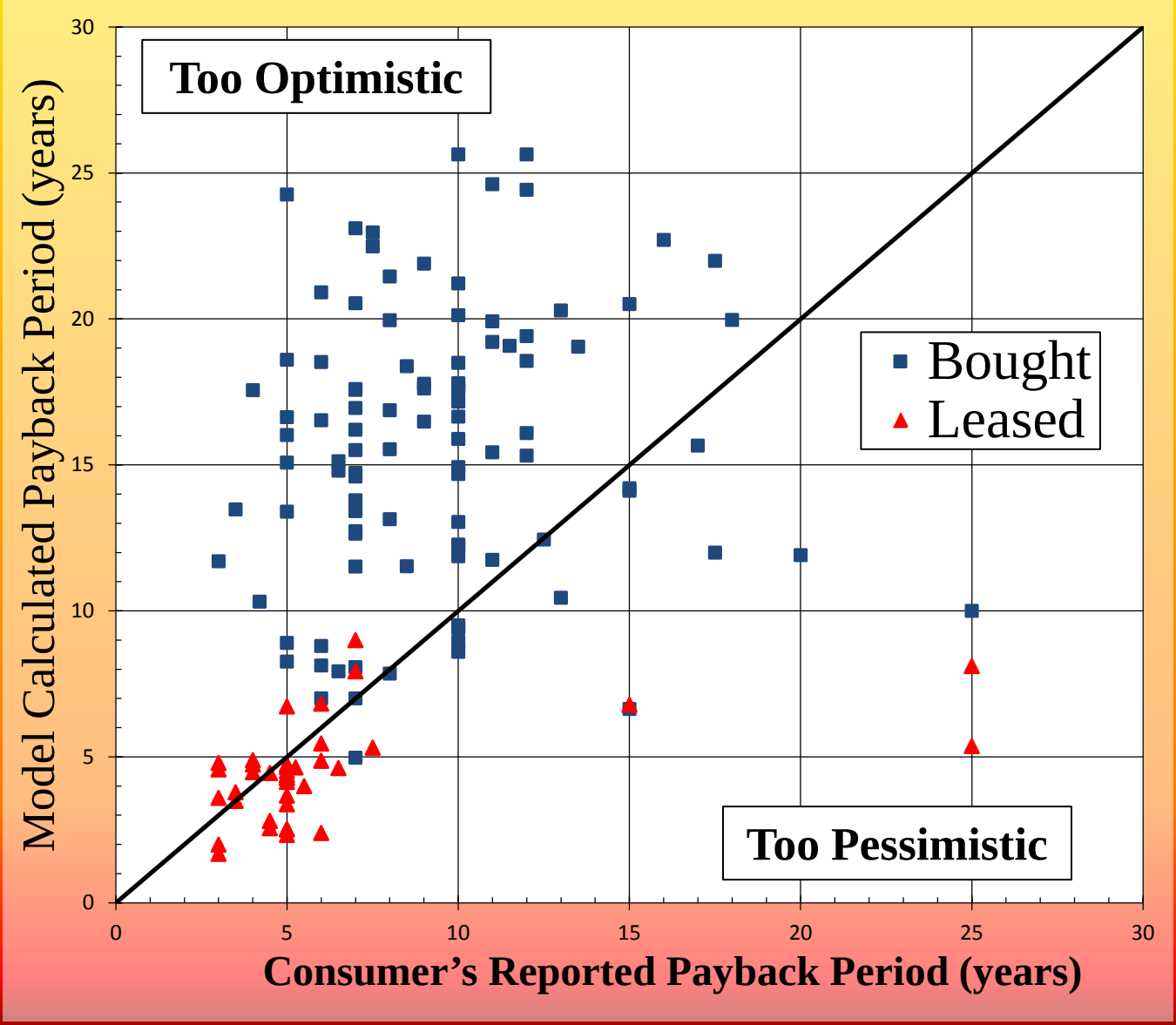
Buying A PV System Is Less Profitable Than Leasing And Often A Loss

Buyers:
Mean: -$490/kW
SD: $1,370/kW

Leasers:
Mean: $935/kW
SD: $595/kW



Expectations of System Payback



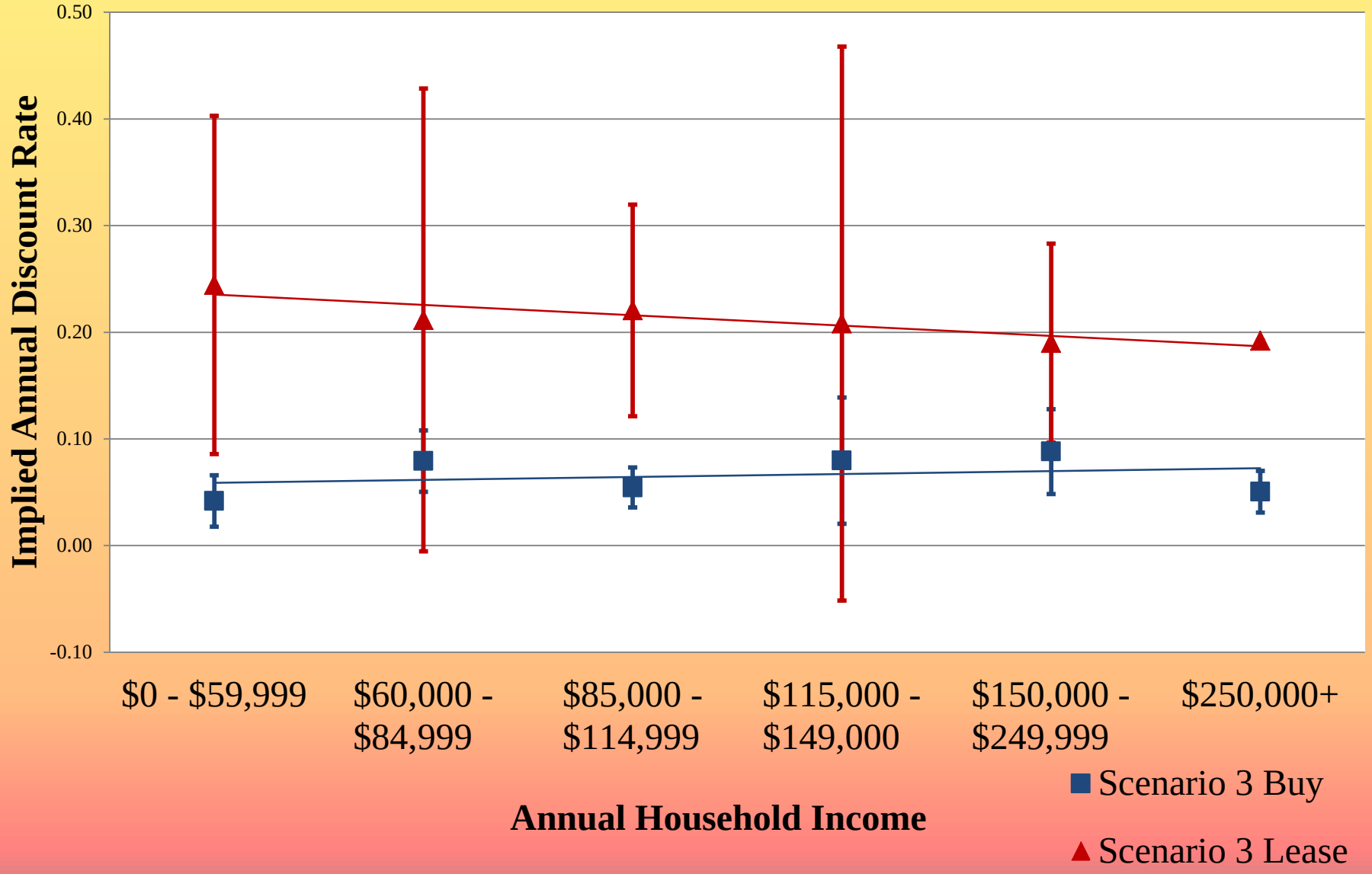
Finding Implied Net Present Value

2. How much do you agree or disagree with each of these statements?

	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I would **not** have installed the PV system if it had cost me $1000 more	○	○	○	○	◉
I would **not** have installed the PV system if it had cost me $2000 more	○	○	○	◉	○
I would **not** have installed the PV system if it had cost me $3000 more	○	○	◉	○	○
I would **not** have installed the PV system if it had cost me $4000 more	○	◉			
I would **not** have installed the PV system if it had cost me $5000 more	○	◉			

This consumer is indifferent to paying **$3000 more** for his system– the **implied NPV!**

Implied Discount Rates For Income And Ownership



Conclusions

- Buyers are optimistic/unprofitable and leasers are realistic/profitable in assessing the true benefits and costs
- Leasers imply a 18%-22% annual discount rate whereas buyers imply 4%-9%
- All of these results have strong policy and marketing implications.