



Net Energy Metering (NEM) 2.0 and Consumer Protection Measures Presentation to Distribution System Collaborative

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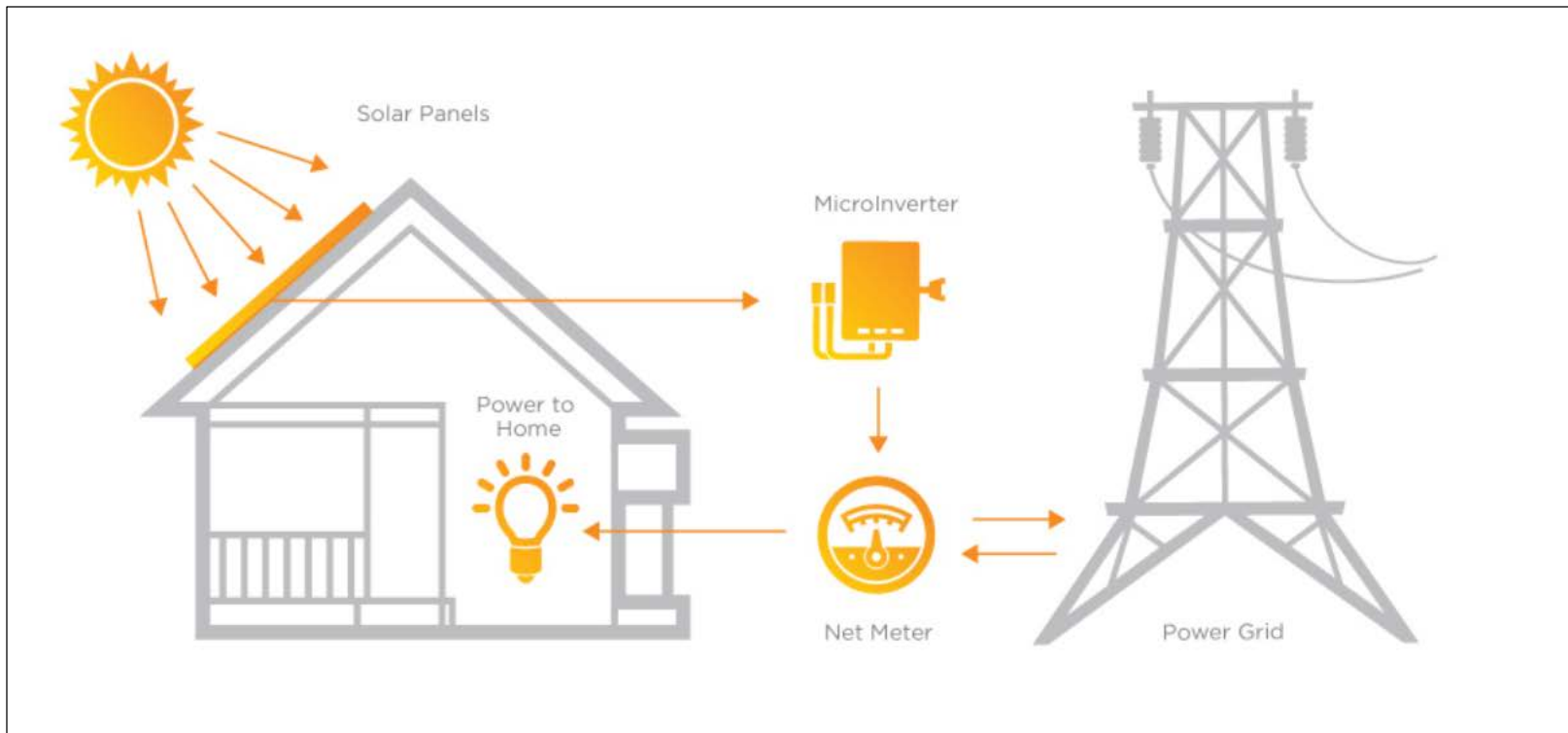




NEM Overview

Customer receives credit on bill for energy generated by onsite renewable energy system

Customer's meter runs backward as energy is exported to the grid, and forward as energy is consumed from the grid





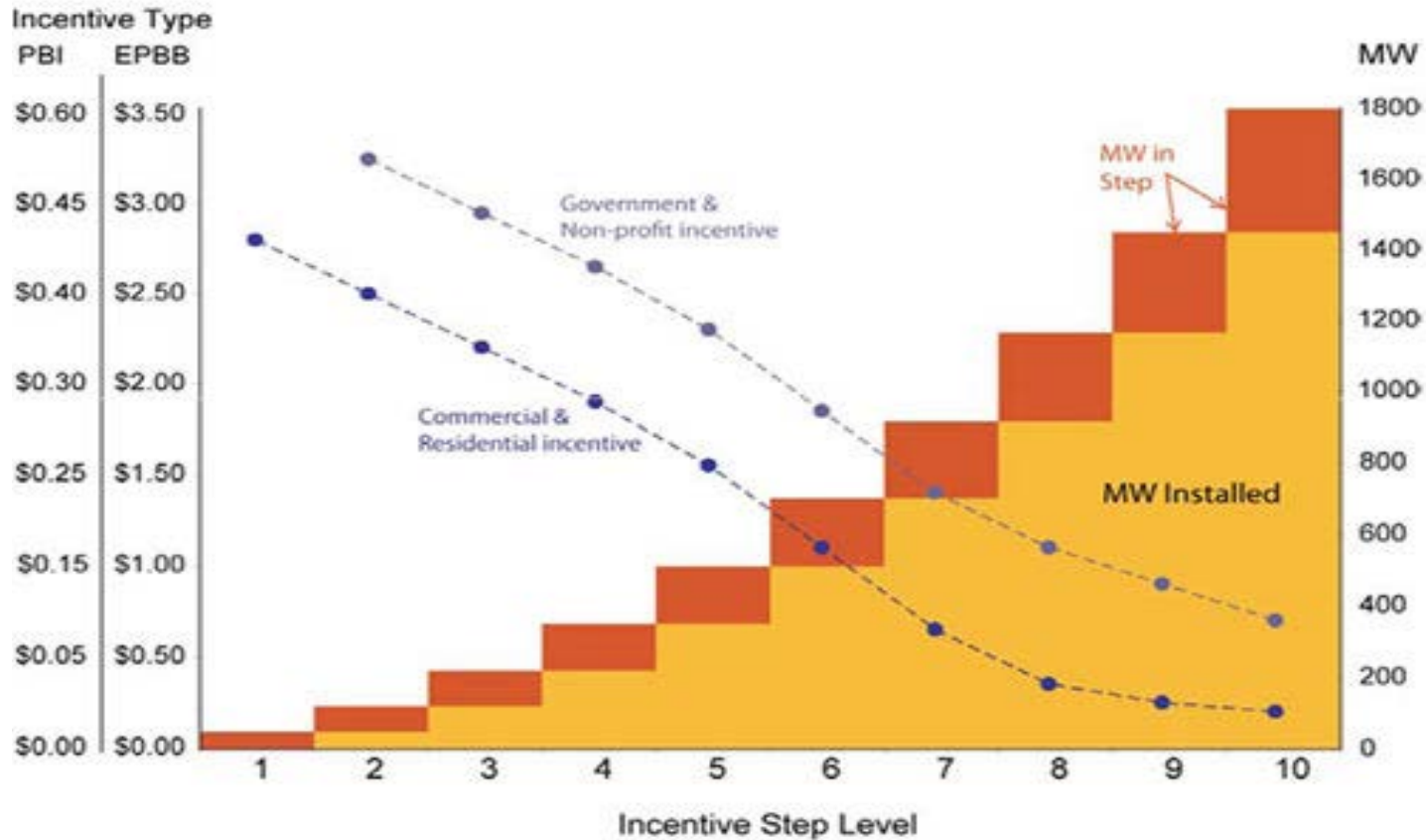
NEM Overview

- Established 1996 (SB 696, Alquist)
- Eligibility:
 - Renewable generation
 - Sized to offset average annual load
 - Up to 1 MW
 - 5% NEM Cap
- Goals:
 - Encourage private investment in renewable energy resources
 - Stimulate in-state economic growth
 - Reduce demand for electricity during peak consumption periods and stabilize California's grid
 - Diversify California's energy resource mix
 - Reduce interconnection and administrative costs for electricity suppliers
 - Encourage conservation and efficiency





Solar DG Policy in CA: NEM + CSI

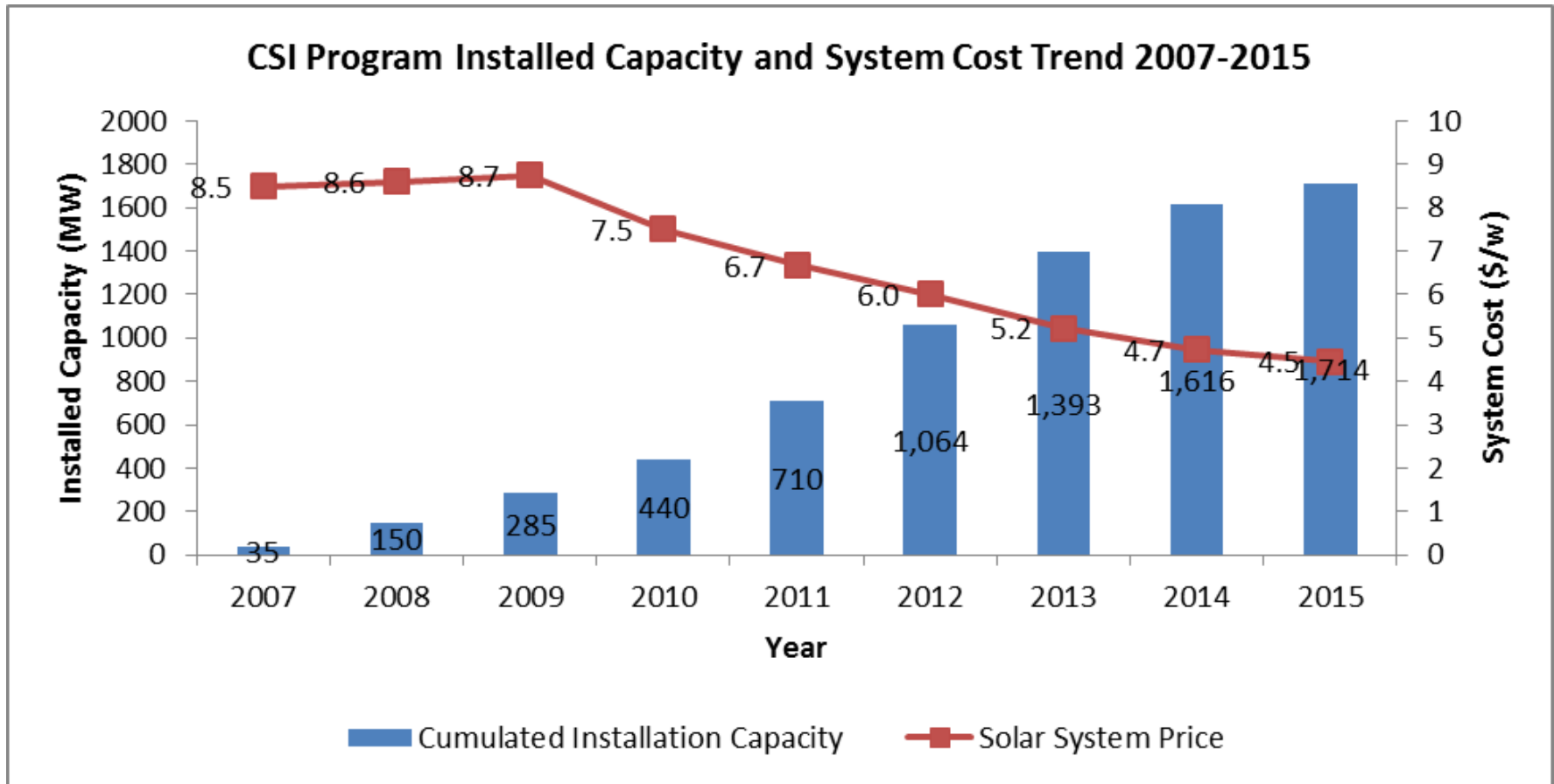


PBI: Performance Based Incentive, paid over 5 years, in \$ / kWh
 EPBB: Expected Performance Based Buydown, paid upfront, in \$ / W



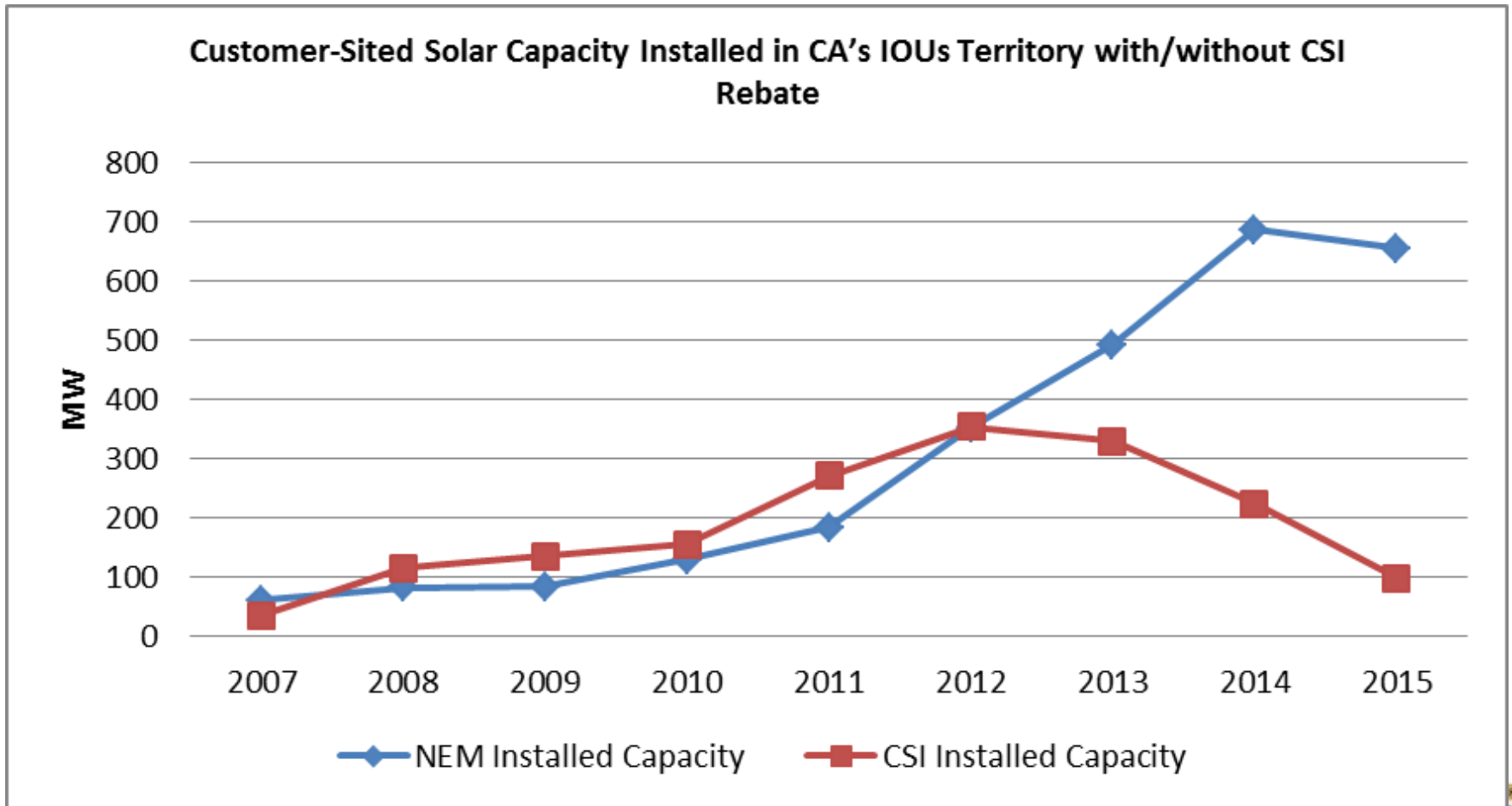


CA Solar Market Transformation





CA Solar Market Transformation





Why NEM 2.0?

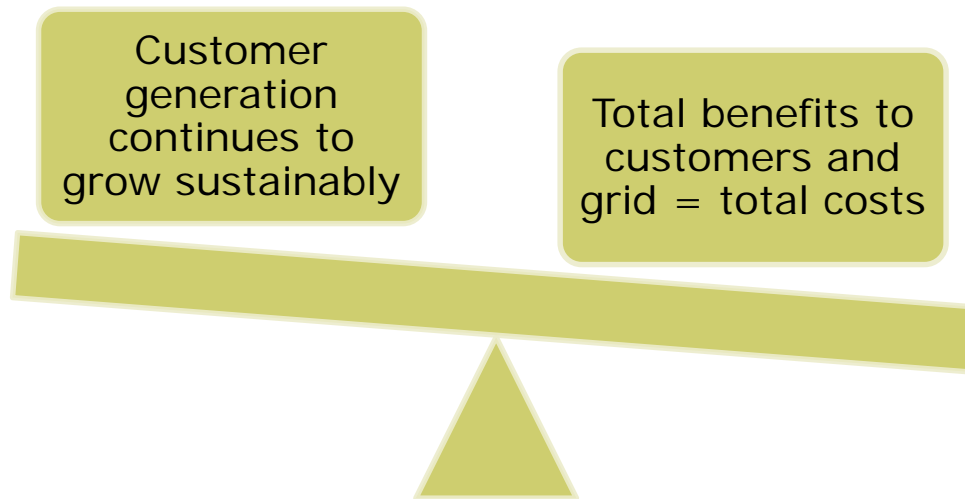
- The legislature told us to!
 - AB 327 (2013, Perea) directed the CPUC to develop a successor tariff to current NEM by December 31, 2015
- Context of legislation:
 - Continue investment in customer-sited renewables following the utilities reaching the NEM Cap
 - Given heightened awareness of cost shift and utility death spiral, transition to a NEM policy that considers costs and benefits





Developing NEM 2.0 Requires a Balancing Act

- AB 327 directed that in developing a successor to NEM CPUC must ensure:



- Also directed to develop alternatives for adoption by residential customers in 'disadvantaged communities'





NEM 2.0 Proceeding

- Robust 1.5 year public process
 - 6 workshops, 2 staff papers, 165 sets of party comments
 - 12 parties filed NEM 2.0 proposals: solar advocates, utilities, environmental advocates, ratepayer advocates
- Utilities argue
 - DG customers don't pay their fair share of maintaining the grid
 - Developers don't need full retail rate NEM to make economics work
- Solar Industry argues
 - Any deviation from current NEM could threaten jobs and the environment
 - DG provides benefits to the grid and environment that should be quantified





NEM 2.0 Proposals

Keep NEM as is

Solar industry, environmental groups

Customers could pay Public Purpose Program charge

NEM + Demand Charge or Installed Capacity Fee

ORA, NRDC

\$/kW monthly fee

Reduce compensation + Demand/Grid Charge

IOUs

4-9 cents/kWh plus \$/kW monthly fee

Feed in Tariff

TURN, SDGE

\$/kWh for all generation at "avoided cost"





NEM 2.0: Main Challenges

- Incomplete information on value of DG to grid
 - DRP and IDER in process
- Unclear how Residential Rate Reform will impact costs/bens
- Balancing sustainable growth against costs = bens





NEM Successor Tariff: “Realigned NEM”

- Continues basic NEM structure, with some changes:
 - Customers pay small one-time interconnection fee
 - Customers pay nonbypassable charges on energy consumed from grid
 - Customers must go on Time of Use rates
- Allows systems over 1 MW to participate
- Establishes warranty and equipment safety requirements
- Guarantees NEM 2.0 customers can remain on Successor Tariff for 20 years from their date of interconnection
- Commission will revisit NEM Successor Tariff in 2019





Next Steps

- NEM 2.0 already in effect in SDG&E territory and likely to go into effect in PG&E territory in December. SCE territory likely in July 2017.
- Consumer Protection measures for NEM 2.0 customers
- Planning for NEM 3.0!





NEM 2.0 Consumer Protection





Background

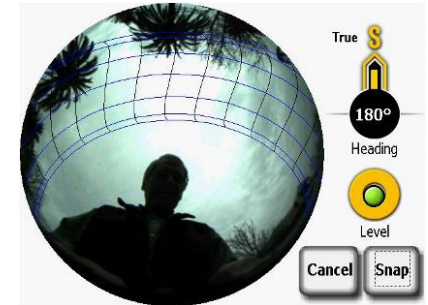
- CPUC is currently considering what consumer protection measures are appropriate for NEM 2.0 customers.
- Consumer protection is critical to a sustainable solar industry.
- CSI Program had consumer protection measures.
- With CSI's close, need to consider what continued, or additional, protections are needed.
- NEM 2.0 Decision directed CPUC staff to:
 - Develop an information packet for NEM customers and
 - Consider whether additional consumer protection measures are needed.





CSI Consumer Protection Measures: System Performance

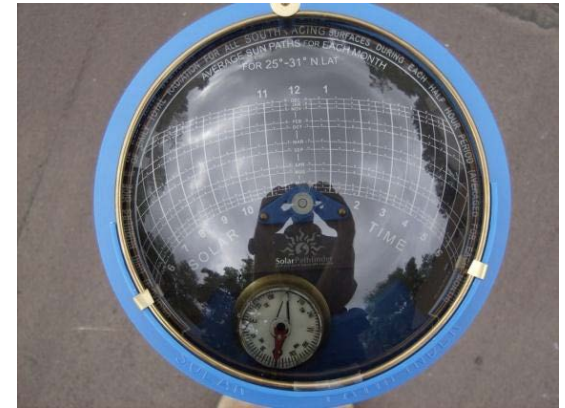
- Program design focused on performance –paid incentives based on actual or expected performance
- Required Customer Disclosure of Expected Performance using standardized calculator – EPBB Calculator
- Required Warranties on Equipment and Installation
 - All equipment had to have a 10-year manufacturer performance warranty of not less than 15% output decline.
 - All contractors had to offer a 10-year warranty on repair or replacement of system on anything not covered by manufacturer warranty and of not less than 15% output decline due to installation issues.
- Required System Performance Monitoring for systems larger than 10 kW





CSI Consumer Protection Measures: Contractor Performance

- Required valid Contractors State License Board contractor license
- Required random onsite inspections
- Required copy of signed installation contract



CALIFORNIA SOLAR INITIATIVE

Field Inspection Report

Number of Modules: 518	Number of Modules: 518	Differences: -70 + +40	5% of \$177,100 = \$8,855 Difference = \$3,953
Total Module Output: 807	Total Module Output: 8,000 kWh		
Annual: 350 kWh	Annual: 182 kWh		
Tilt from Horizontal: 30°	Tilt from Horizontal: 14°		

Original EPBB		Based on Inspection	
Array Tilt (degrees)	1	Array Tilt (degrees)	14
Array Azimuth (degrees)	110 True North 0°	Array Azimuth (degrees)	187 True North 0°
Results Annual kWh: 161,000 Summer Months: May-October Summer kWh: 92,272 CEC-AC Rating: 93,252 kW Capacity Factor ¹ : 19.709% Prevailing Capacity Factor ² : 20.000% Design Factor ³ : 98.545% Incentive Rate: \$0.22/kWh Incentive ⁴ : \$177,100		Results Annual kWh: 164,594 Summer Months: May-October Summer kWh: 93,055 CEC-AC Rating: 93,252 kW Capacity Factor ¹ : 20.149% Prevailing Capacity Factor ² : 20.000% Design Factor ³ : 100.745% Incentive Rate: \$0.22/kWh Incentive ⁴ : \$181,053	

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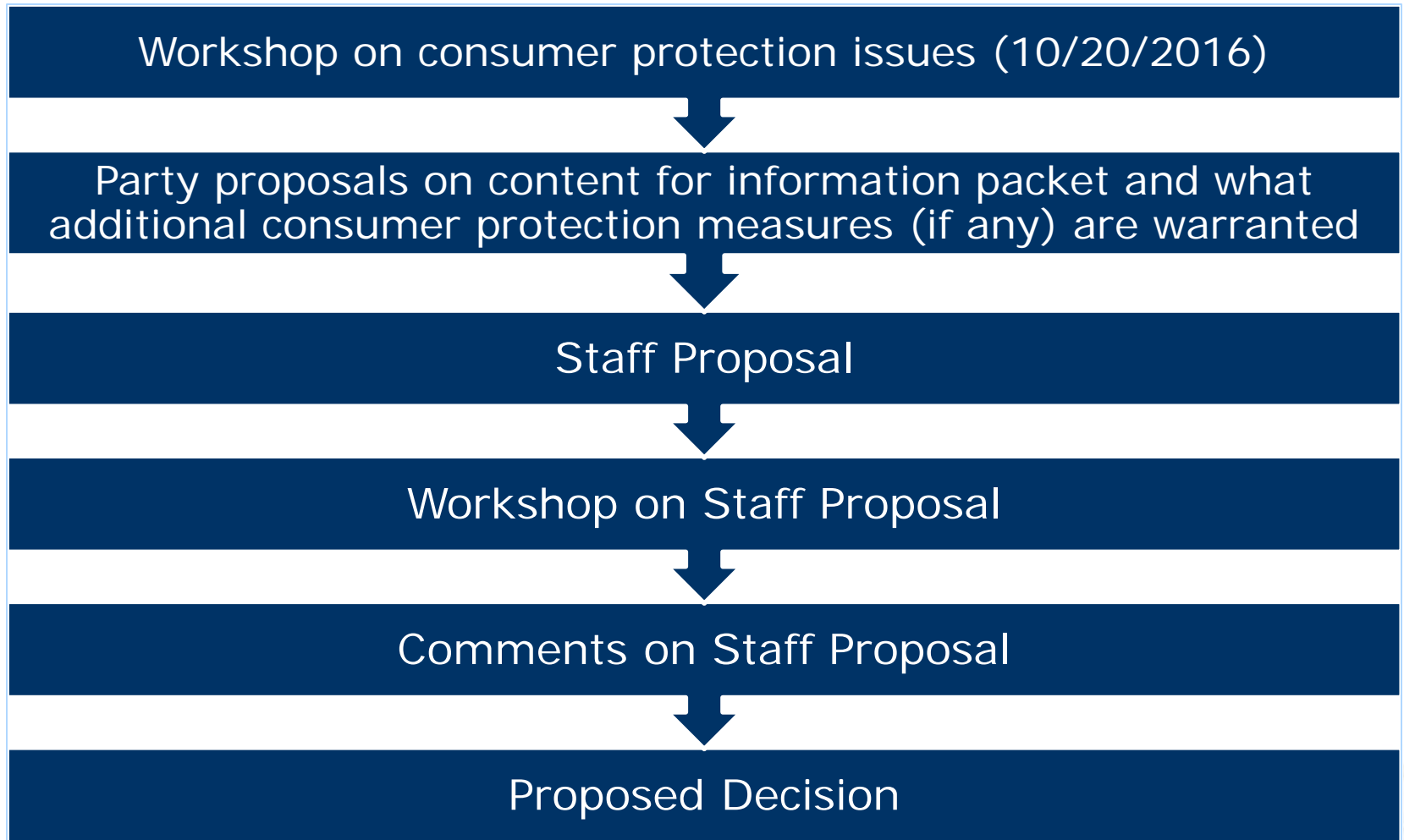
CSI Consumer Protection Measures: System Cost and Size

- Required EE Audit Signed by Host Customer (acknowledge load history)
- Program limited eligible rebate system size to historic customer load
- System Cost Cap -> ("High Cost Justification and Acknowledgement Form ")
- Transparency of program data on system costs & number of contractors
 - Released weekly on California Solar Statistics
 - Showed all system pricing information & key installation characteristics
 - Helped industry with financing, validated sales claims
 - Helped policy makers with timely information about industry
 - Helped consumers shop





NEM 2.0 Consumer Protection Process





Questions?

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