



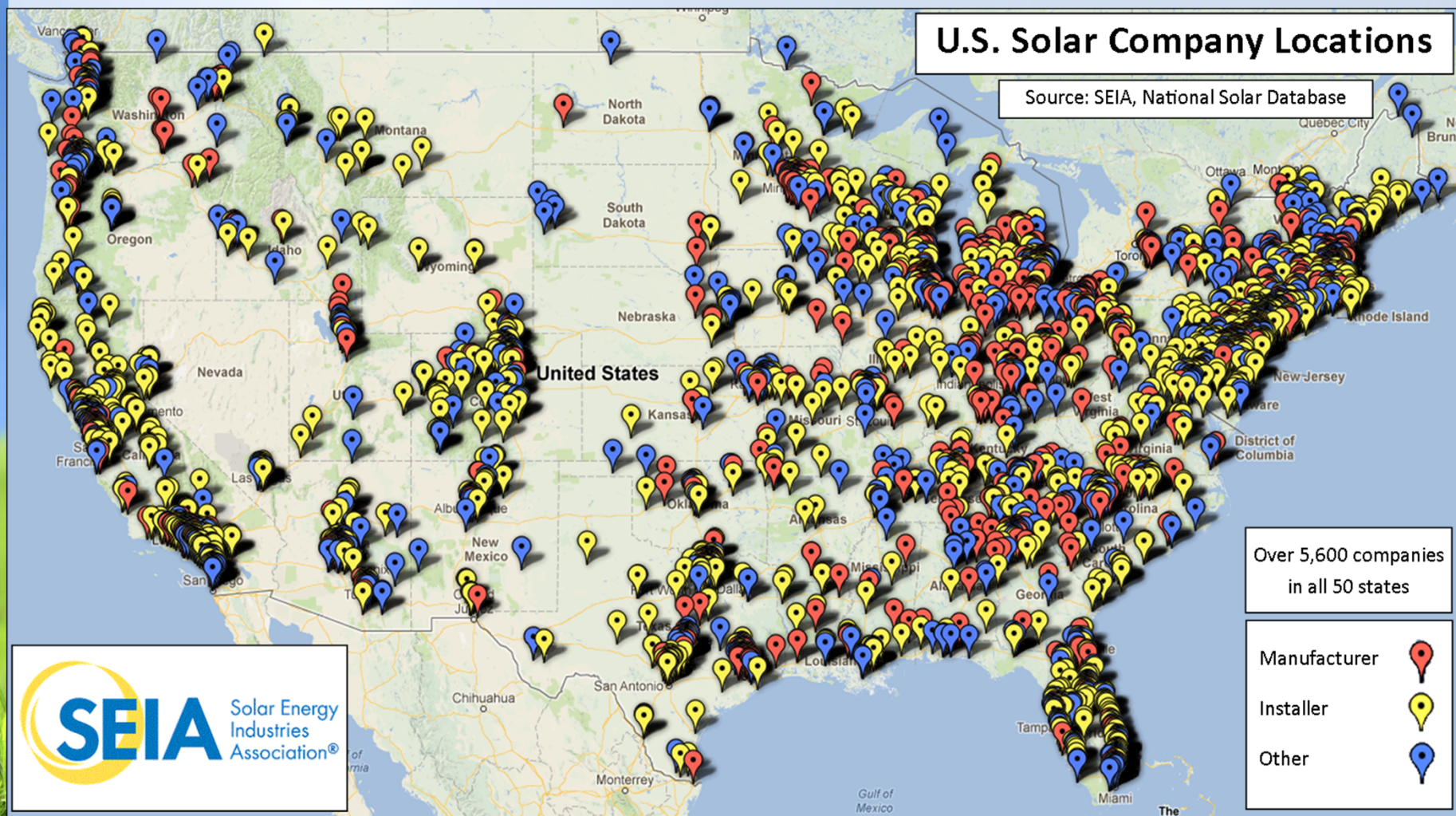
Benefits of Distributed Generation PV MADRI Working Group December 2013

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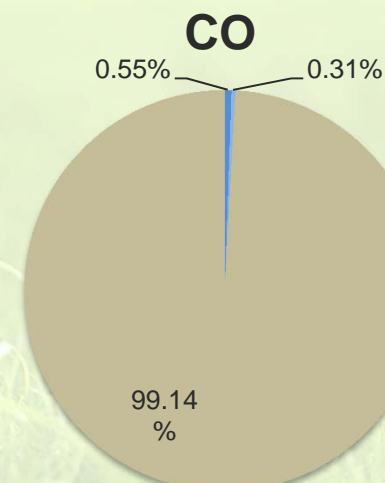
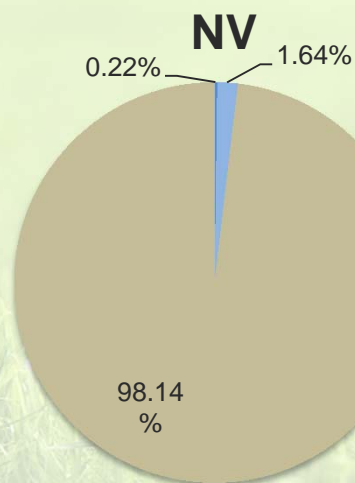
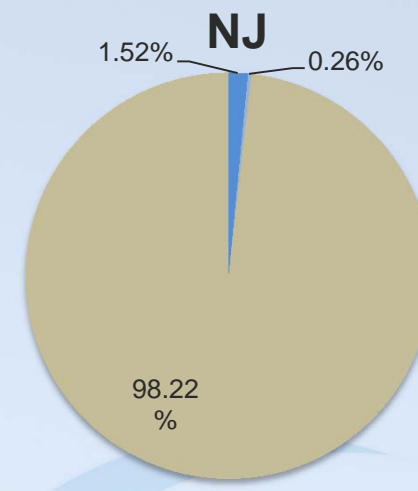
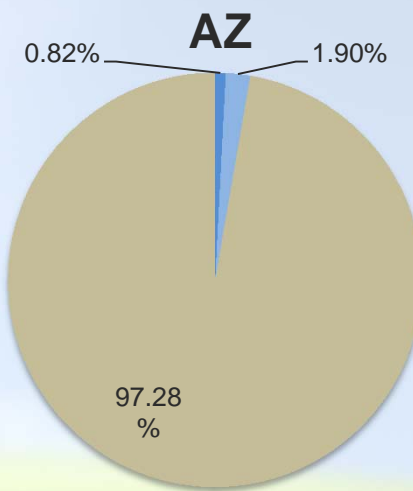
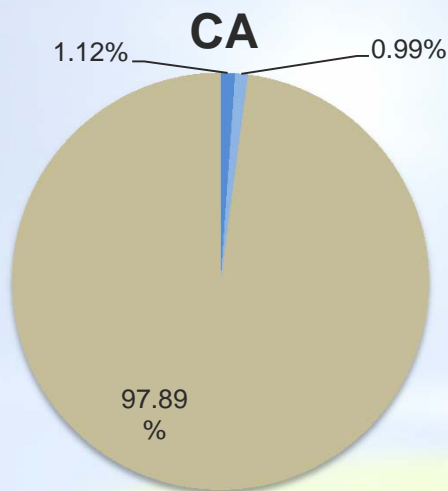
About SEIA

- **Founded in 1974**
- **U.S. National Trade Association for Solar Energy**
 - ~ 1,000 member companies from around the world
 - Members from across all 50 states
 - Largest companies in the world to the smallest, across value chain
- **SEIA is the voice of the U.S. solar energy industry**
 - We promote solar to the White House and Congress as well as to State Policy Makers across the US
- **SEIA advocates for all solar technologies and markets**
- **Our Mission: Build a strong solar industry to power America**

U.S. Solar Business Locations



DG and central solar still tiny fraction of retail sales, even in top 5 solar markets

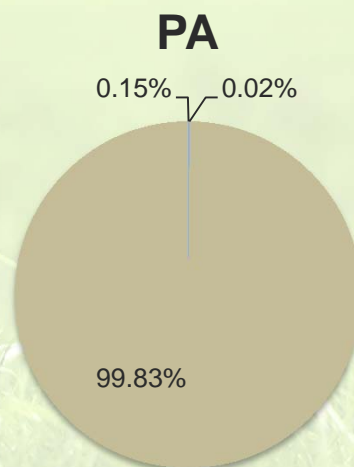
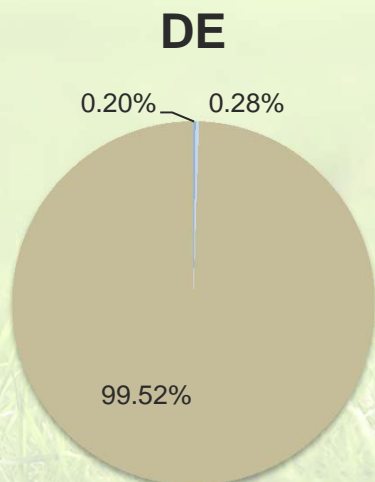
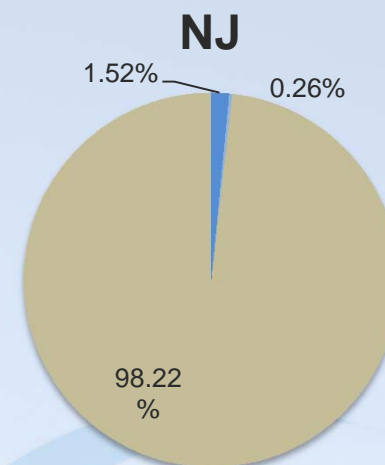
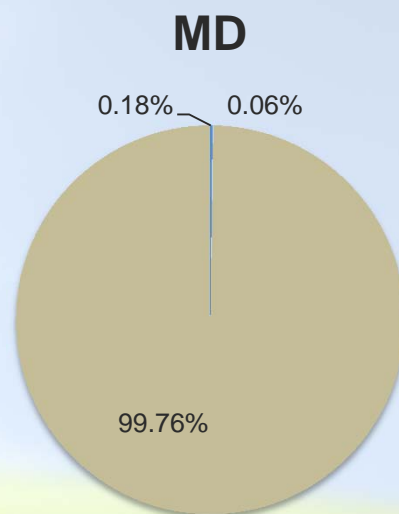
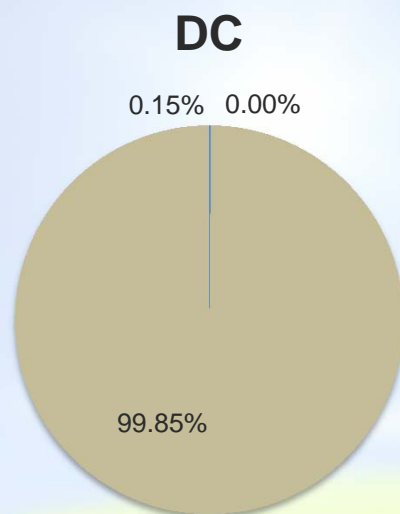


- Resi and Non-resi solar as % of retail sales
- Utility-scale solar as % of retail sales
- Non-solar generation as % of retail sales

Note: Resi and non-resi includes both onsite consumption and exported energy.

Data from: 2011 EIA retail sales; Q2 13 Solar Market Insight Report solar deployment data.

DG and central solar as % of retail sales, mid-Atlantic



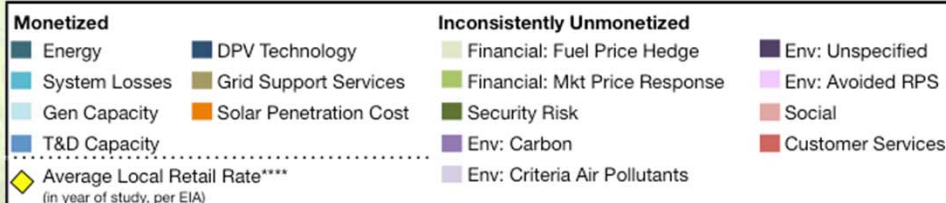
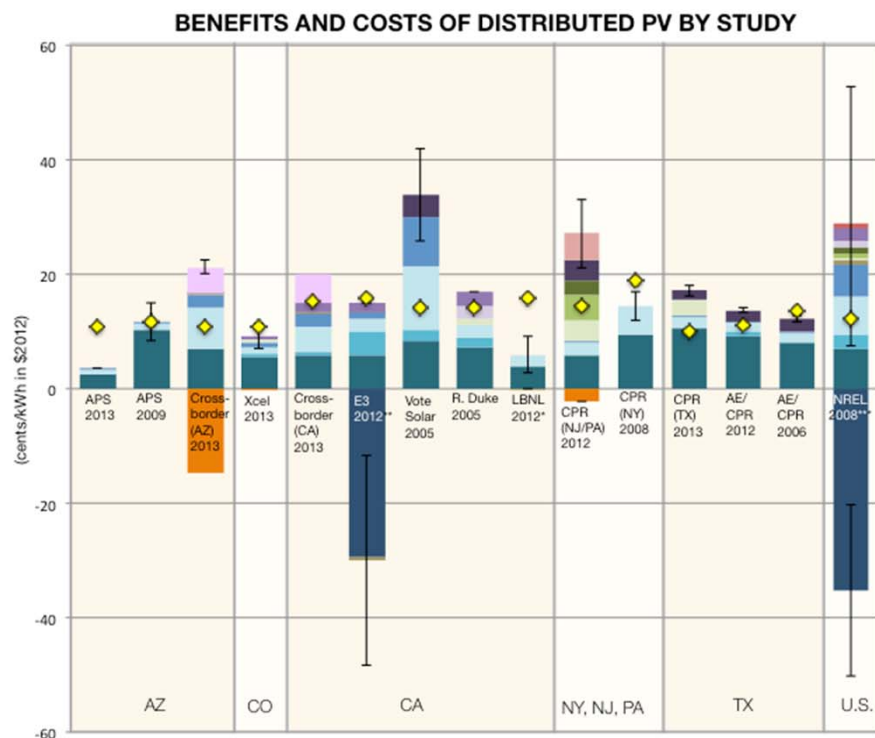
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Quantifying costs and benefits – a young but growing field

SUMMARY OF DPV BENEFITS AND COSTS



INSIGHTS

- No study comprehensively evaluated the benefits and costs of DPV, although many acknowledge additional sources of benefit or cost and many agree on the broad categories of benefit and cost.
- There is a significant range of estimated value across studies, driven primarily by differences in local context, input assumptions, and methodological approaches.
- Because of these differences, comparing results across studies can be informative, but should be done with the understanding that results must be normalized for context, assumptions, or methodology.
- While detailed methodological differences abound, there is some agreement on overall approach to estimating energy and capacity value. There is significantly less agreement on overall approach to estimating grid support services and currently unmonetized values including financial and security risk, environment, and social value.

* The LBNL study only gives the net value for ancillary services

** E3's DPV technology cost includes LCOE + interconnection cost

*** The NREL study is a meta-analysis, not a research study. Customer Services, defined as the value to customer of a green option, was only reflected in the NREL 2008 meta-analysis and not included elsewhere in this report.

****Average retail rate included for reference; it is not appropriate to compare the average retail rate to total benefits presented without also reflecting costs (i.e., net value) and any material differences within rate designs (i.e., not average).

Note: E3 2012 study not included in this chart because that study did not itemize results. See page 47.

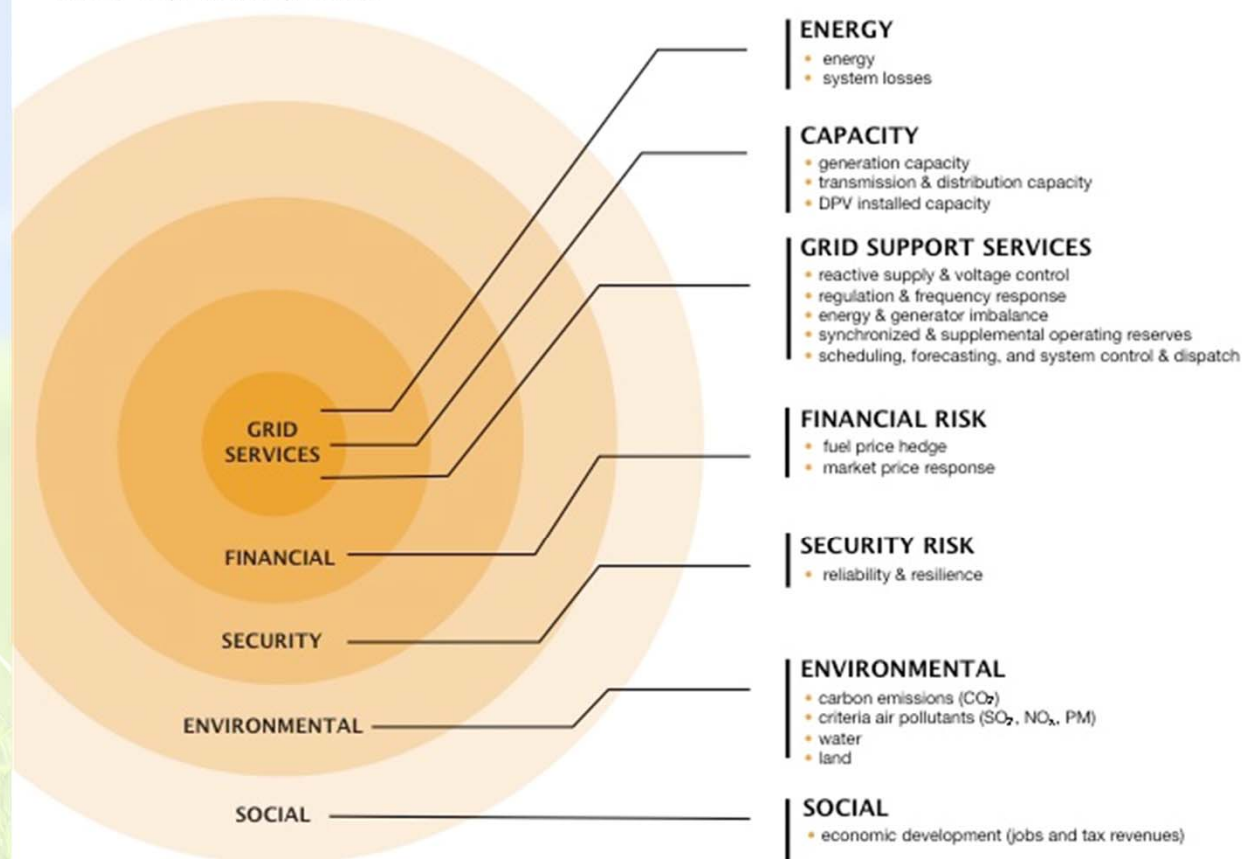
A Review of Solar PV Benefit & Cost Studies, 2nd edition 22

What are the benefits of solar?

BENEFIT & COST CATEGORIES



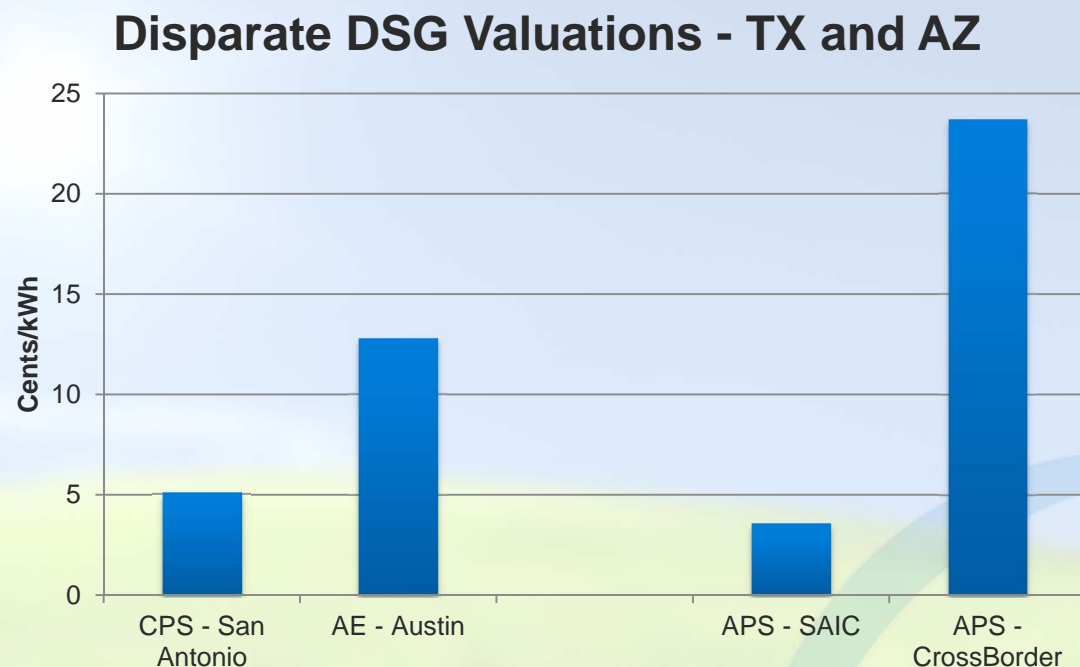
For the purposes of this report, **value is defined as net value, i.e. benefits minus costs**. Depending upon the size of the benefit and the size of the cost, value can be positive or negative. A variety of categories of benefits or costs of DPV have been considered or acknowledged in evaluating the value of DPV. Broadly, these categories are:



http://www.rmi.org/Knowledge-Center/Library/2013-13_eLabDERCostValue

A Review of Solar PV Benefit & Cost Studies, 2nd edition

Determining value of solar depends on careful analysis of benefits, costs



“Valuations vary by utility, but the authors contend that valuation methodologies should not. The authors suggest standardized approaches for the various benefits and costs, and explain how to calculate them regardless of the structure of the program or rate in which this valuation is used.”

Source: A Regulator's Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation. Interstate Renewable Energy Council, October 2013. Download the report at: <http://www.irecusa.org/publications/> under 'Regulatory'

Thank You

