

# Five “Hot” Topics in Net Metered Solar Energy

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INTERSTATE RENEWABLE ENERGY COUNCIL

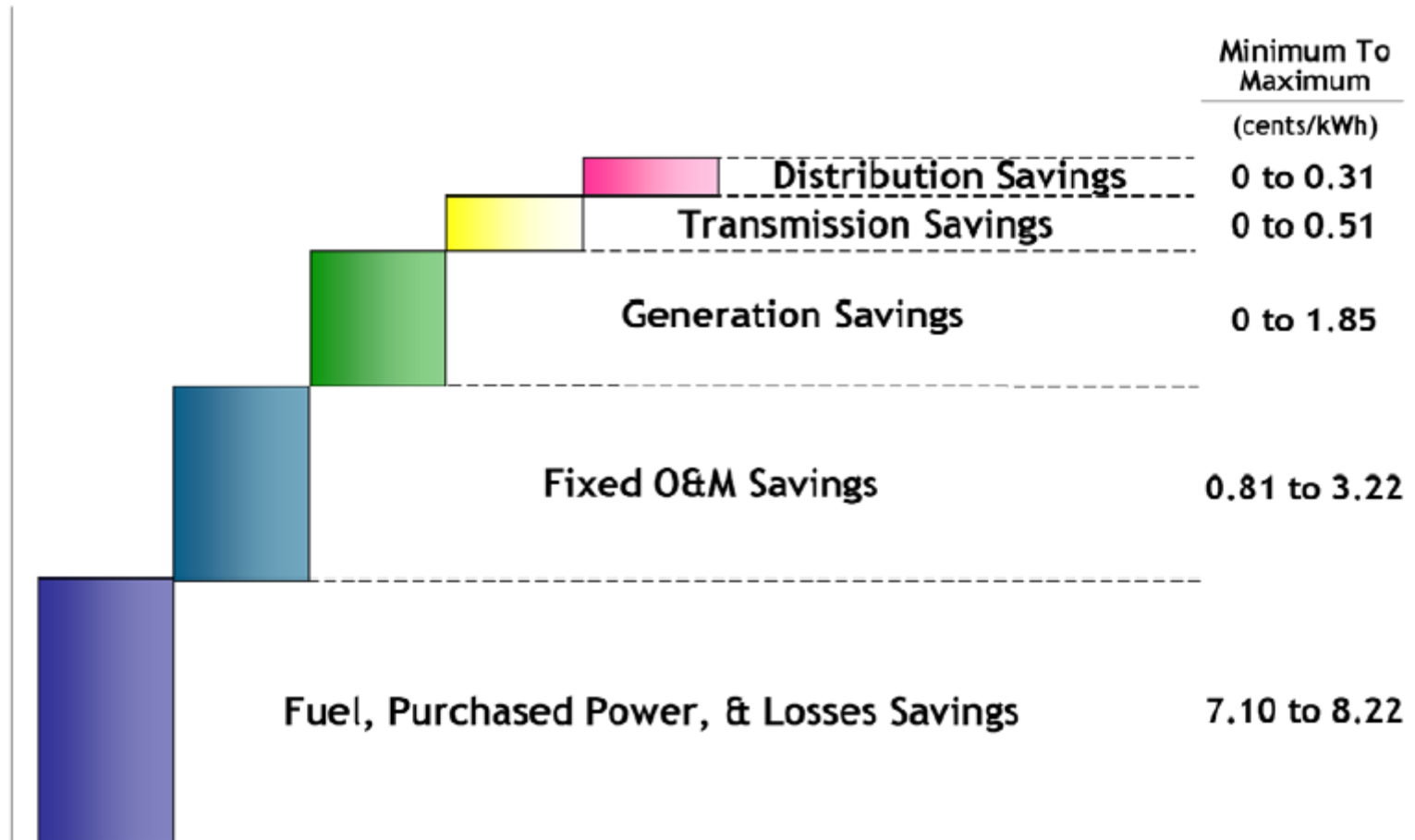
# The “Hot” Topics

- 1) Valuing distributed solar’s impact on distribution and transmission systems
- 2) Regulation of third party owners
- 3) Insurance for small systems
- 4) Net metered system caps
- 5) Net metered program caps

# Topic 1: T&D Impacts

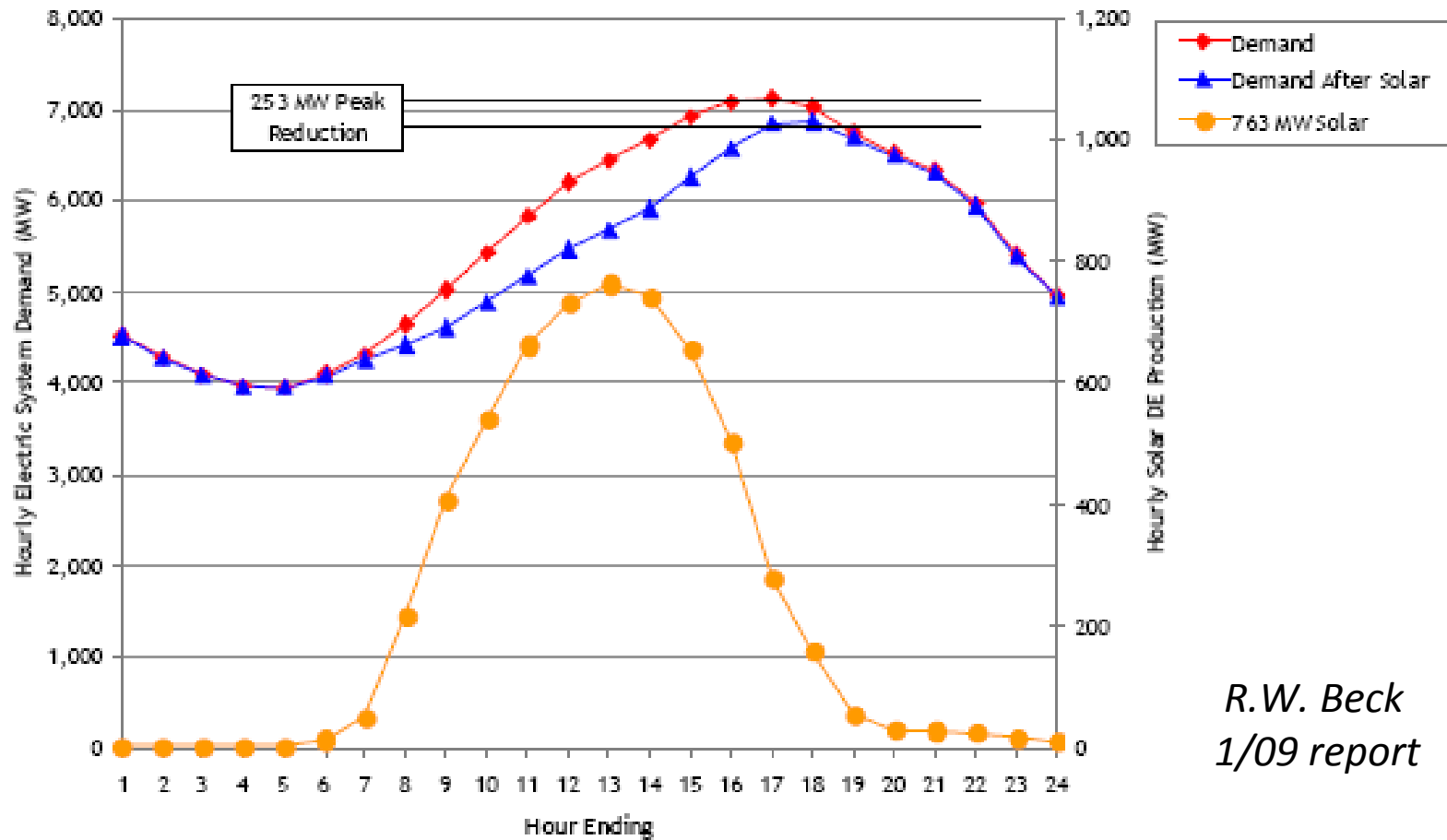
- Restrictive approach: Utilities can't count on solar energy to meet circuit or system peaks, so the value to the utility is just the avoided cost. Net metering forces ratepayers to subsidize owners of distributed solar energy.
- The alternative: on top of avoided cost, distributed solar provides:
  - Daytime generation (higher than average avoided energy cost)
  - Avoided line losses
  - Avoided O&M expenses for T&D and generation
  - Some deferred T&D and generation
  - Major T&D and generation deferral if coupled with DSM
- Retail rates are a decent proxy for total value of solar to the utility, for non-demand metered customers .
- Demand metered customers are getting minimal capacity credit and are therefore subsidizing ratepayers.

# Solar Valuation for Arizona Public Service



“Distributed Renewable Energy Operating Impacts and Valuation Study” prepared by R.W. Beck for APS, January, 2009, available at <http://www.solarfuturearizona.com/Documents.html>.

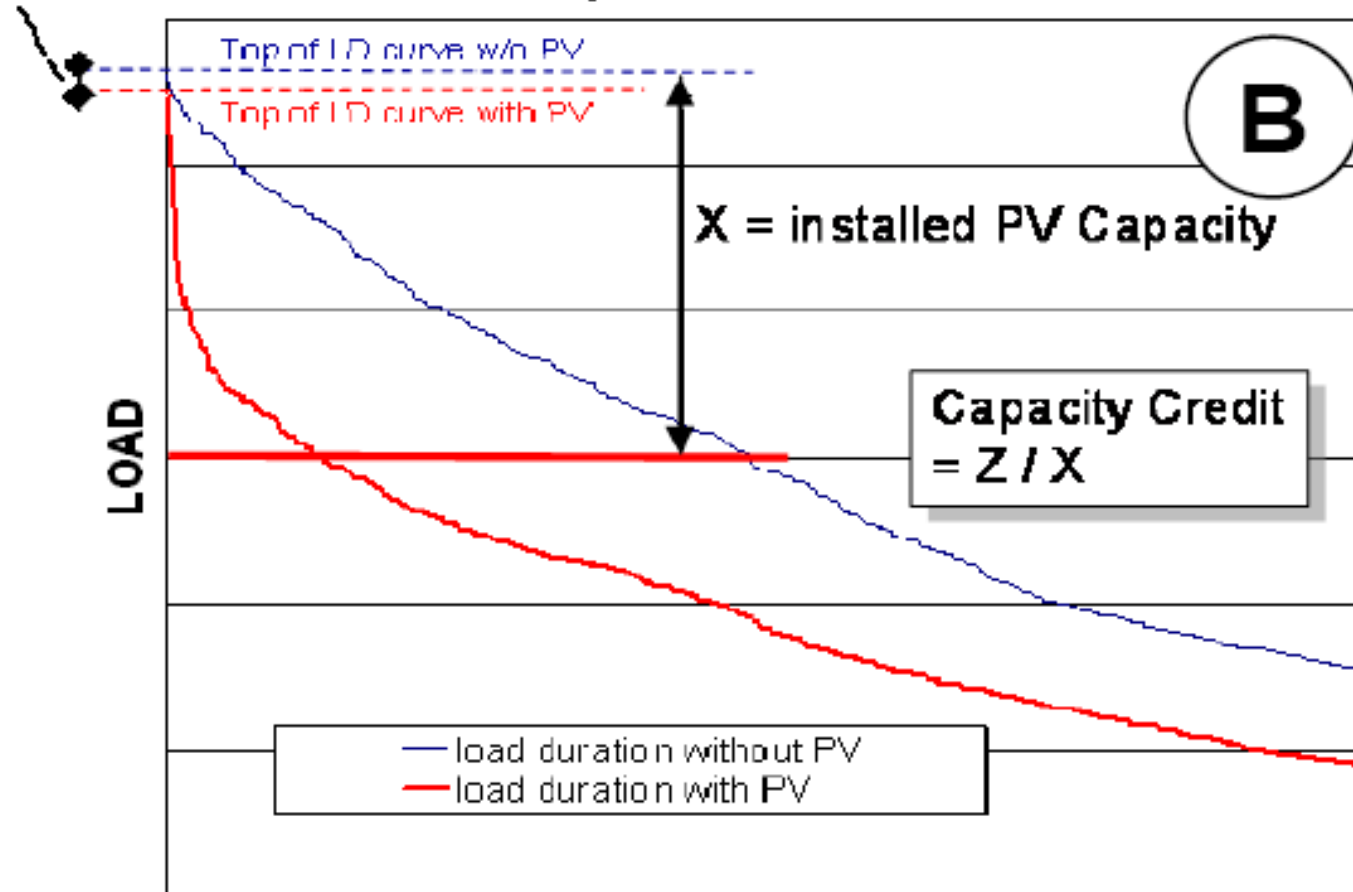
# APS Summer Day Analysis



R.W. Beck  
1/09 report

# Solar Impact on Load Duration Curves

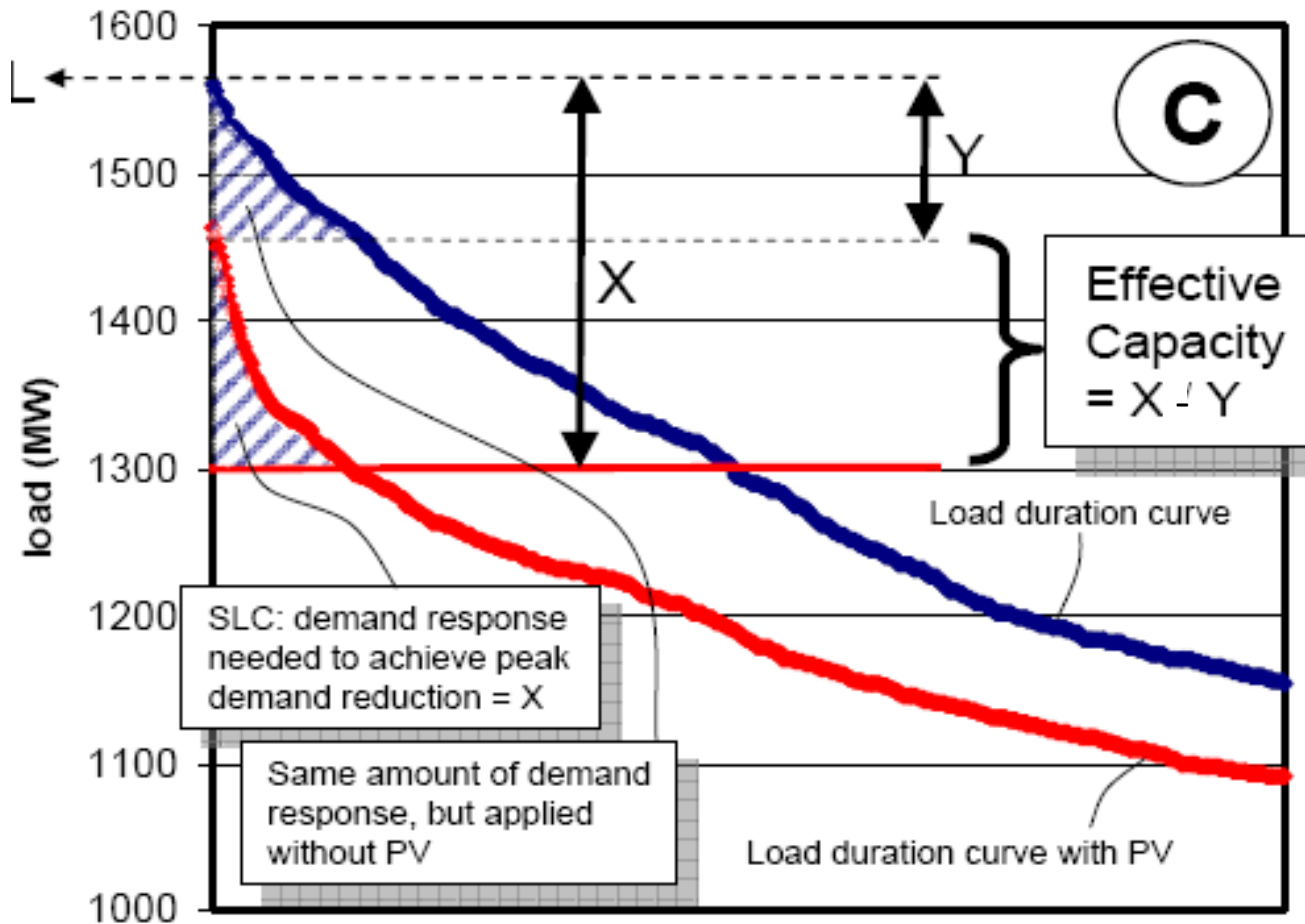
**Z = difference between tops of LD curves**



Perez et al,  
 "Redefining PV  
 Capacity," Public  
 Utilities Fortnightly,  
 Feb., 2009. Publicly  
 available paper by  
 the authors with the  
 same results is  
 available at  
<http://www.asrc.cesst.m.albany.edu/perez/07-08/ases08.pdf>.

All 8760 hours/yr ordered by load (top third shown here)

# Marrying Solar with Demand Response



SLC: demand response needed to achieve peak demand reduction = X

Same amount of demand response, but applied without PV

Effective Capacity = X - Y

*Perez et al, finding effective capacity at 10% solar penetration to be 70% in Nevada, 60% in Rochester and 20% in Portland, OR.*

All 8760 hours/yr ordered by load (top third shown here)

# Topic 2: Regulation of Third Party Owners

- Restrictive approach: If a third party owns a solar facility and sells power to a utility customer, that makes the owner a utility subject to Commission regulation. It also means that the owner is violating the utility's exclusive franchise and must cease operation.
- The alternative: There is no need to regulate third party owners because there is a robust competitive market. And, third party owners are not utilities under typical state definitions because each facility serves just one customer, not the general public.
- Third party ownership enables use of federal tax credits and depreciation that often can't be accessed otherwise and eliminates up-front costs for the customer.
- 40%+ of the potential market for solar depends on this model. SunEdison and MMA are big system leaders. SolarCity leads for small systems.

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# Third Party Ownership in the West

- California allows it and 40% of installed solar capacity in the state uses this model according to California Solar Initiative data.
- Colorado allows it and has several third-party owned systems, but it is an open issue, with Xcel claiming right to authorize systems.
- Oregon, Arizona and Nevada allowed it in 2008.
- New Mexico and Utah are considering it.
- Washington is a possibility, but not under review.
- Rest of the West inactive regarding third party ownership.
- Elsewhere: New Jersey has many third party-owned systems; Florida only allows leasing (which cuts out third party ownership of systems on government and non-profit properties).

# Topic 3: Insurance for Small Systems

- Restrictive approach: A solar facility might cause damages and if the owner is underinsured, ratepayers will be forced to cover the costs. Therefore, all owners should carry adequate insurance and name the utility as an additional insured on any policy.
- The alternative: Recognize that there has been no reported damage with 50,000+ solar facilities installed, there is no special insurance package for small systems, and existing insurance is very likely to cover any losses. Therefore, don't require insurance.
- Leading insurers polled – existing homeowner policies would cover traditional net metered solar facilities. However, payments to owners for net excess generation could lead an insurer to rely on exclusion for home-based businesses.
- Leading solar insurance broker concludes that rider to add utility as an additional insured would be impractical.

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# Approaches to Insurance

- Twelve states prohibit insurance requirements for most net metered systems, including most leading solar states: CA, NJ, NV and AZ.
- Two states in past year set high bar for insurance requirement: IL set bar at 1 MW, NM set limit at 200 kW. This approach is functional because project developers install systems of this size and have specialized insurance already.
- Several states require proof of insurance while not requiring specific amount or naming of utility as an additional insured. This approach is functional, but adds an administrative burden on the utility and the customer with no benefit to date.

# Topic 4: Net Metered System Caps

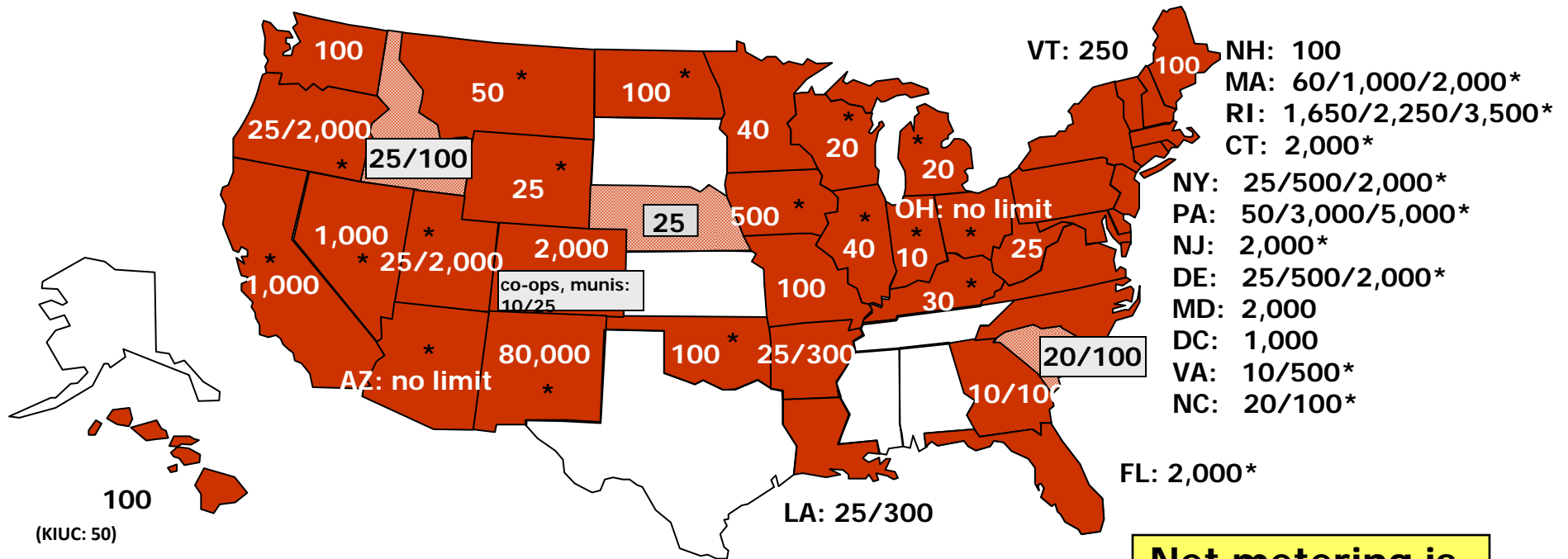
- Restrictive approach: Under net metering, ratepayers subsidize owners (see Topic 1) so we don't want the program to be very big (see Topic 5). Having capped the program, we don't want a few big systems to eat up the whole program. So, we need to cap the maximum system size.
- The alternative: Uncap program size because net metering does not entail subsidization and encourage the development of systems of all sizes.
- In California, with roughly three quarters of the nation's installed solar, 80% of the capacity is commercial (mostly large systems).
- While solar is modular, there are still economies of scale resulting in lower costs for larger systems.
- There's a very strong correlation between system cap and solar penetration; system size caps restrict solar deployment more than anything currently.
- 17 states plus Washington, D.C. have caps over 1 MW or no cap at all.

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# Where Net Metering Is Offered (facility size limits in kilowatts)

DSIRE: [www.dsireusa.org](http://www.dsireusa.org)

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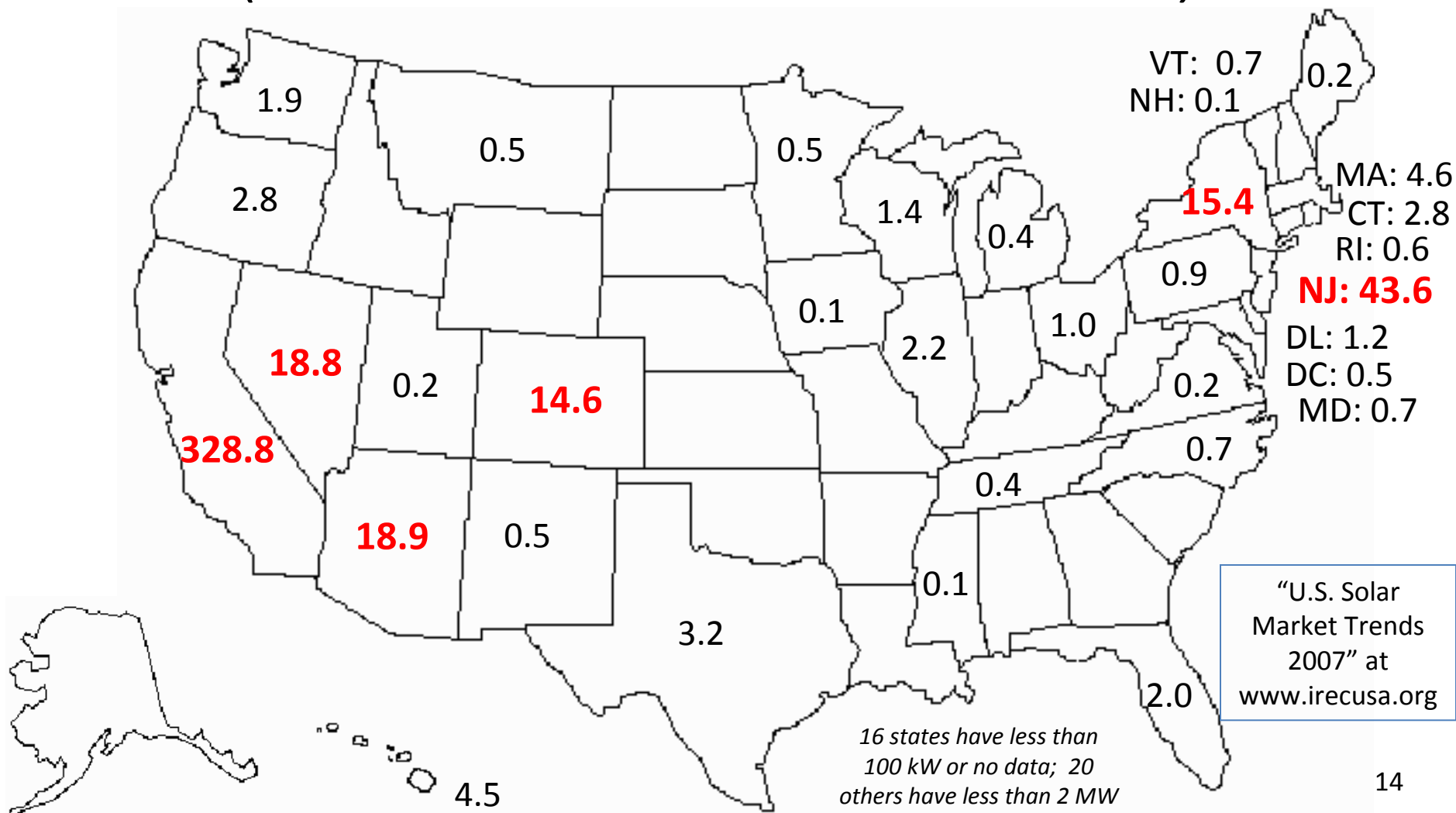


- State-wide net metering for all utility types
- \* State-wide net metering for certain utility types only (e.g., investor-owned utilities)
- Net metering offered voluntarily by one or more individual utilities

**Net metering is available in 43 states + D.C.**

*Note: Numbers indicate individual system size limit in kilowatts (kW). Some states' limits vary by customer type, technology and/or system application; this is the case when multiple numbers appear for one state. Other limits may also apply. For complete details, see 13 [www.dsireusa.org](http://www.dsireusa.org).*

# 475 MW of Grid-Connected Solar through 2007 (at least 240 MW more installed in 2008)



# Topic 5: Net Metering Program Caps

- Restrictive approach: Net metering is subsidization, so cap it at 1%. Make it 1% of peak load, so it's about half a percent of energy. And, make it 1% of peak in some past year. And, only require that large utilities offer it.
- The alternative: Uncap the program to realize the benefits of distributed solar. Allow recovery of program costs in early stages and expect a self-sustaining program when hundreds of MW are installed.
- Not a big issue yet, as nationwide penetration of distributed solar is under 0.05%, but it will be an issue shortly in states with substantial incentive programs. PG&E has hit 1.3% of peak and expects to be at 2.5% of peak by year's end.
- Twenty states plus D.C. have programs that are either uncapped or capped at more than 5%. Utah just set the highest cap at 20%.
- Fourteen states have caps under 0.2% of utility peak load, and half of these states do not offer net metering at all.

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**IREC resources:**

Assistance to Commissions developing net metering and interconnection procedures – please contact me

State policies and maps at [www.dsireusa.org](http://www.dsireusa.org)

Net metering and interconnection procedure models at [www.irecusa.org](http://www.irecusa.org)

Interconnection and disconnect switch reports for DOE's Solar ABCs at [www.solarabcs.org/interconnection](http://www.solarabcs.org/interconnection)