

# **Testimony before House Committee on Natural Resources and Energy**

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**4/10/2015**

## **Summary:**

**Vermont's energy policy has enormous cost impacts that can last decades. The Vermont legislature's decisions on energy policy will not change the world's climate, but will certainly change Vermont's economic climate. Lawmakers are being informed mainly by advocates such as the Vermont renewable energy industry and the DPS. Experts skeptical of the state's ambitious renewable goals need to provide more information for a more balanced debate. Solar benefits have been based on studies with outdated, incorrect assumptions. New information shows that the solar capacity benefit is overestimated. There has been insufficient review of meeting renewable energy goals with lower cost Canadian renewable sources rather than in state wind and solar sources. More long term impact cost and economic impact analysis is needed.**

## **My Qualifications**

**Electric Power Engineer**

**Career with electric utilities and their consultants**

**Retired after 26 years at CVPS and GMP**

**Includes solar value analysis at GMP**

## **My Motivation to Testify**

**Decisions being made with inadequate information and analysis**

**Decisions have extremely large and long lasting impacts**

**Debate is not balanced**

**Vermont Renewable Energy Industry is very powerful**

**DPS influenced by governor's pro-renewable policy**

**Inadequate information on negative cost impacts**

# **Solar benefits are overestimated**

**Capacity benefit for generation and transmission is too high**

**Law of diminishing returns**

**New solar capacity shifts electric peaks to later in the day**

**Capacity benefit is based on % generated at time of peak**

**As peaks move later in the day, solar capacity benefit declines**

**Peak shift is already occurring**

**August 2014 peak occurred at 6-7:00 PM**

**Solar output at this hour is 12% of capacity**

**Peak shift recognized by GMP:**

**Extract from Rutland Area Reliability Plan 4-1-2015**

Further offset by solar generation is expected within a very few years but will level off as the area's post-sundown loads (which are unaffected by solar generation) begin to exceed the customary midday to afternoon peak load. This time-shift in the daily peak load is changing the way planning studies must be done for the Rutland area, and in fairly short order, will have the same effect statewide as solar power gains traction.

## **Capacity benefits problematic even before peak shift**

### **Transmission system**

**Most costs based on 12 monthly peaks, where four winter months have no solar output and two other months have near zero**

**Other costs not avoided because solar generation does not result in much transmission savings**

**i.e., if solar generation reduces power delivered, utilities can't remove spare poles and wires and sell for scrap**

**Load growth is flat or declining**

**Thus, there are practically no savings from utilities avoiding costly system upgrades**

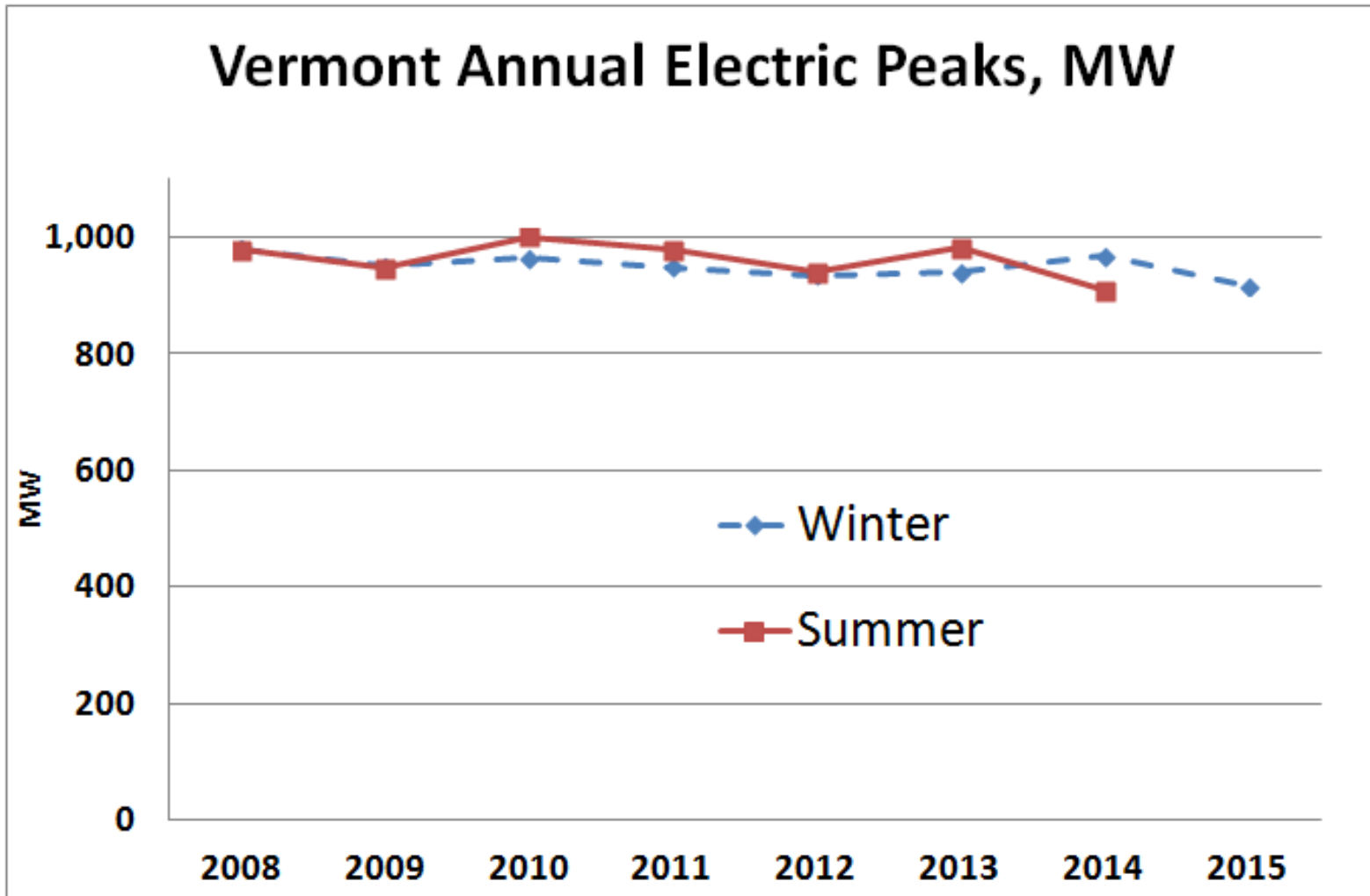
### **Distribution system**

**At best no savings from solar; solar sometimes increases costs**

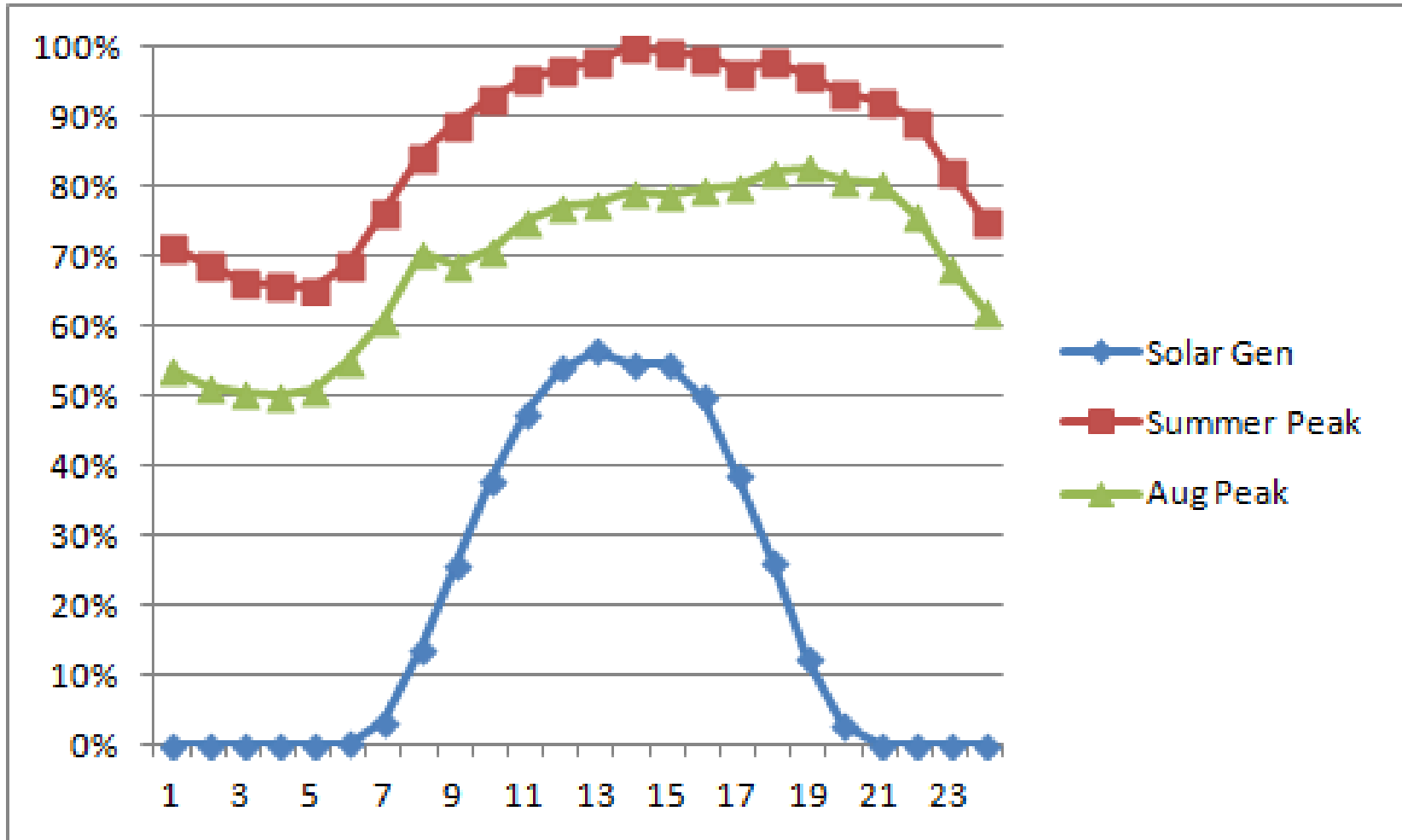
**T&D Upgrades often done for reliability, not load growth**

# Solar does not eliminate need for electric grid

## Winter Peak Electric Loads are Comparable to Summer Peaks



## Recent Summer Peak and Solar Data

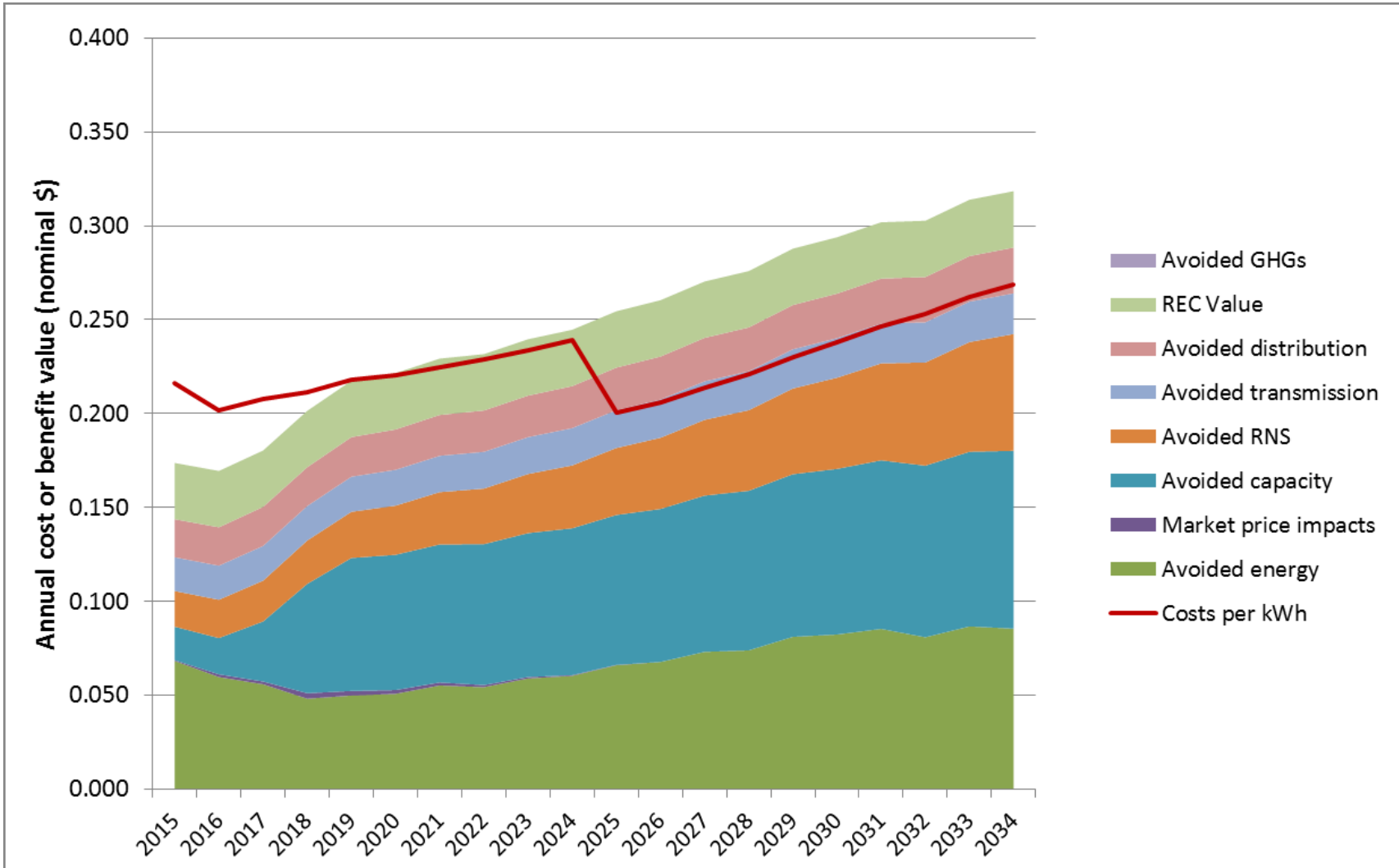


## **Recommendations**

**Request and review new analysis before passing H40**

**Consider changes to existing renewable goals**

## DPS Net Metering Study Overestimates Solar Value



**Exhibit 9.** Per-kWh costs (red line) and benefits (colored areas) for a 4 kW fixed solar PV system installed in 2015, from a ratepayer perspective.