
Solar in the Northwest

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Net Metering Program Manager



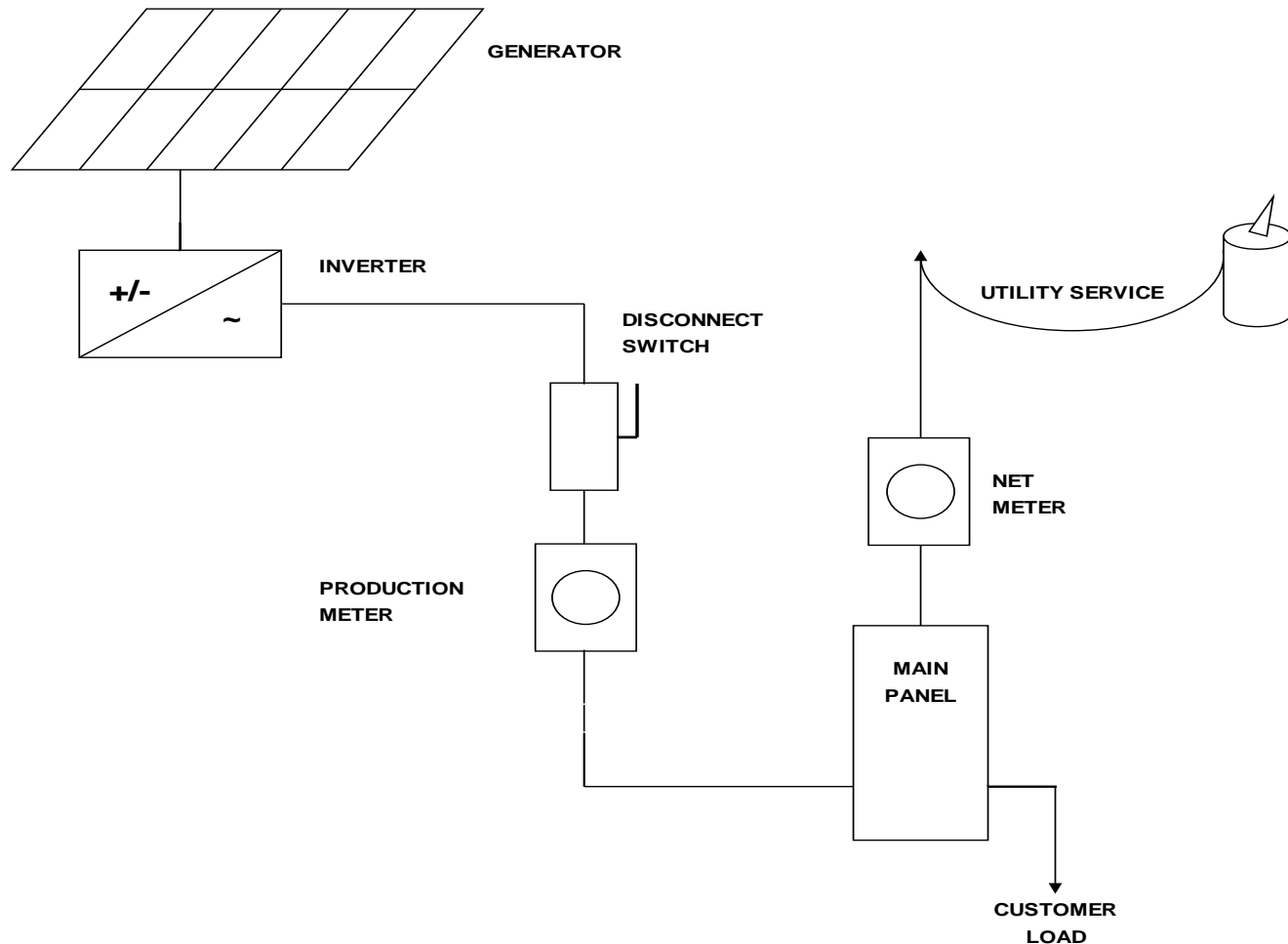
What is “Net Metering”?

- It’s not just a “type of meter”
- Customer-owned small-scale generation
 - Parallels to the grid
 - May “run the meter backwards” at times
 - Examples:
 - Solar Photo-voltaic (PV)
 - Micro-hydro
 - Co-Generation
 - Wind Turbines
 - Anaerobic Digestion
 - Other?
- Typically (but not necessarily) Green Power
- Typically (but not necessarily) Residential
- Purpose is to offset load

Definitions

- *Interconnected* (generation)
 - Generation that parallels to the utility grid
 - “Grid-tied” systems
 - Standby generators are typically not “interconnected”
- *Net Metering*
 - Surplus generation back feeds into the utility grid
 - Back feed “runs the meter backwards” and offsets prior usage
- *Production Metering*
 - Gross output of the generation system (before any load)

Graphical Representation



Washington's Production Meter Law

- Utility participation is voluntary
 - Customer participation is voluntary
 - Utility administers the program on behalf of the State; pass-through “rebate” from the State to the customer
 - .8 / kWh for Wind
 - 1 / kWh for Wind if Blades made in WA
 - 1 / kWh for Solar or Anaerobic Digester
 - 1.2 / kWh for Solar or Wind if Inverters made in WA
 - 2.4 / kWh for Solar if Panels made in WA
 - 3.6 / kWh for Solar if Panels AND Inverters made in WA
- Maximum of **\$5,000** per customer per year
- Two-pronged approach by the State
 - Incentive for individuals to install green power systems
 - Incentive for equipment manufacturers to locate in Washington

Washington's Production Meter Law

- Program is through 2020
- “Limited” Availability; cap on total payments by State
 - Cap is .5% of the taxable electricity annual sales in the state
 - If cap is reached, then payment rate would be dialed back evenly, but new systems would still be accepted
- Eligibility Restrictions
 - Solar, Wind, and Anaerobic Digestion only
(excludes: hydro, biomass combustion, etc.)
 - Must be the property owner, not a renter
(excludes a lot of businesses)
 - Federal Government Agencies excluded
 - Electric and Gas Utilities excluded
 - Community Solar option

2015

- The program continued to accelerate. 1347 new customers in 2015
- Uncertainty over Investment Tax Credit (ITC) and state incentives
- Falling solar prices and continued adoption
- More community solar
- More Washington made equipment
- More production per kW
- Larger systems installed
- Flat utility electric sales

The Numbers

2015

- Production Incentive: \$6,022,000
- 3925 Net Metered Customers
- 26.3 MW Capacity

2014

- Production Incentive: \$3,130,000
- 2578 Net Metered Customers
- 15.8 MW Capacity

2013

- Production Incentive: \$1,838,000
- 1906 Net Metered Customers
- 10.8 MW Capacity

2012

- Production Incentive: \$1,106,000
- 1476 Net Metered Customers
- 7.8 MW Capacity

2011

- Production Incentive: \$545,000
- 1062 Net Metered Customers
- 5.1 MW Capacity

2010

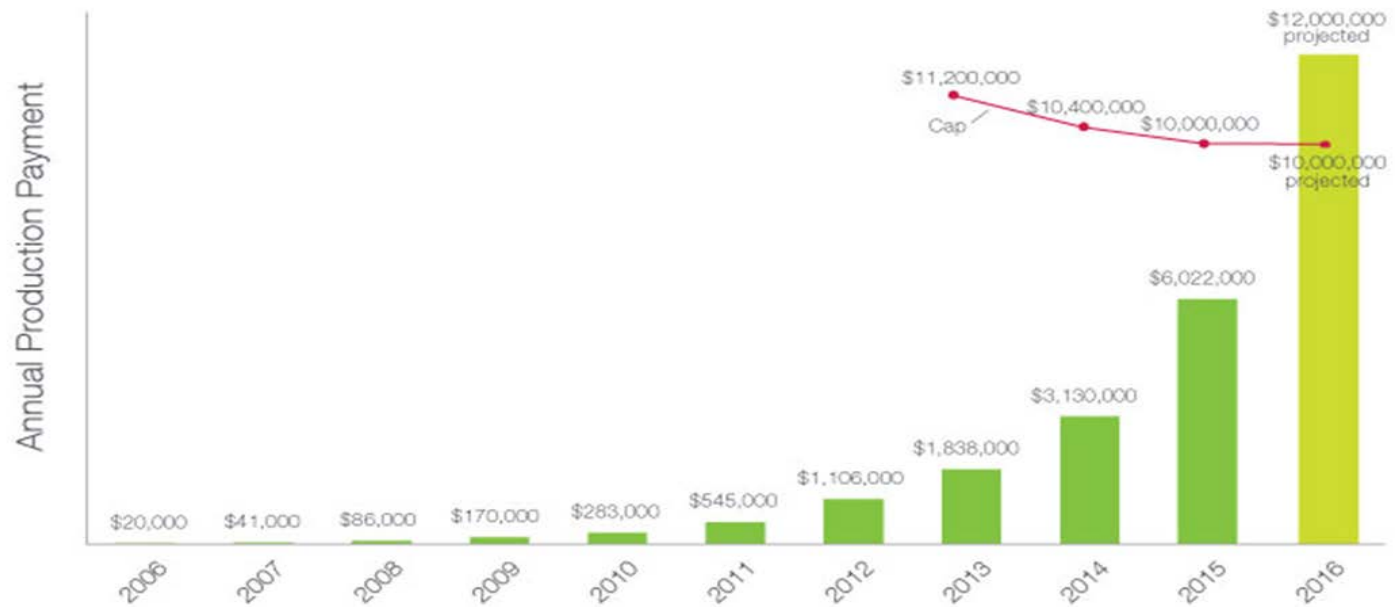
- Production Incentive: \$283,000
- 793 Net Metered Customers
- 3.4 MW Capacity

2009

- Production Incentive: \$170,000
- 540 Net Metered Customers
- 2.1 MW Capacity

Production Payment

Production Payment



PSE 2015 Taxable Electric Sales

\$2,011,119,512

.5% = \$10,055,597

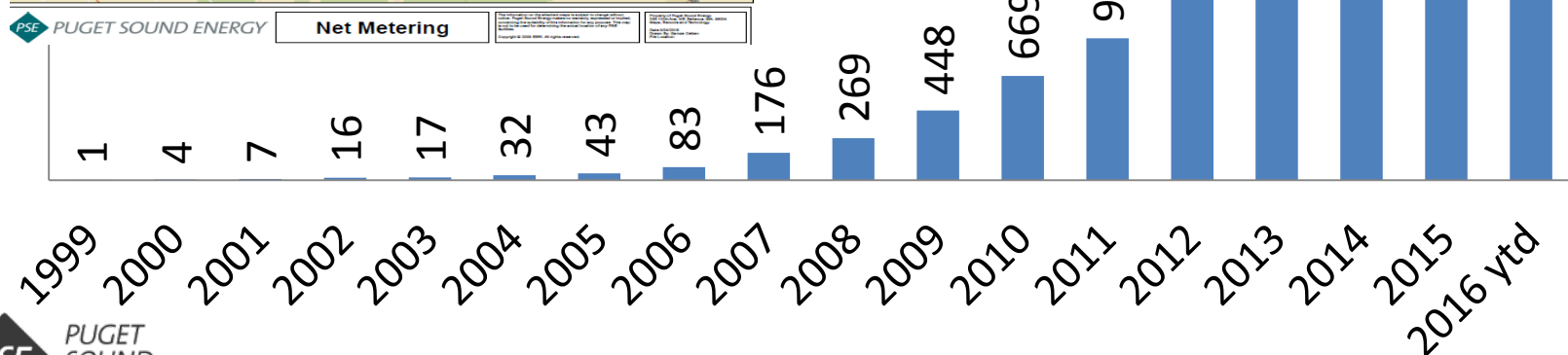
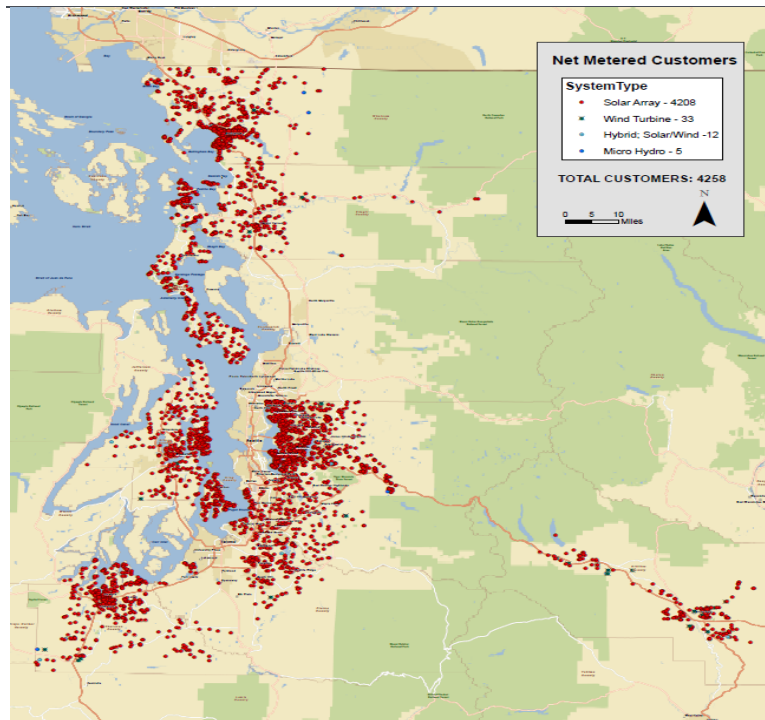
5% of that = \$502,779

(2014 = \$2,001,055,773 \$10.1M pool)

(2013 = \$2,078,848,097 \$10.4M pool)

(2012 = \$2,224,433,814 \$11.2M pool)

Net Metering Growth

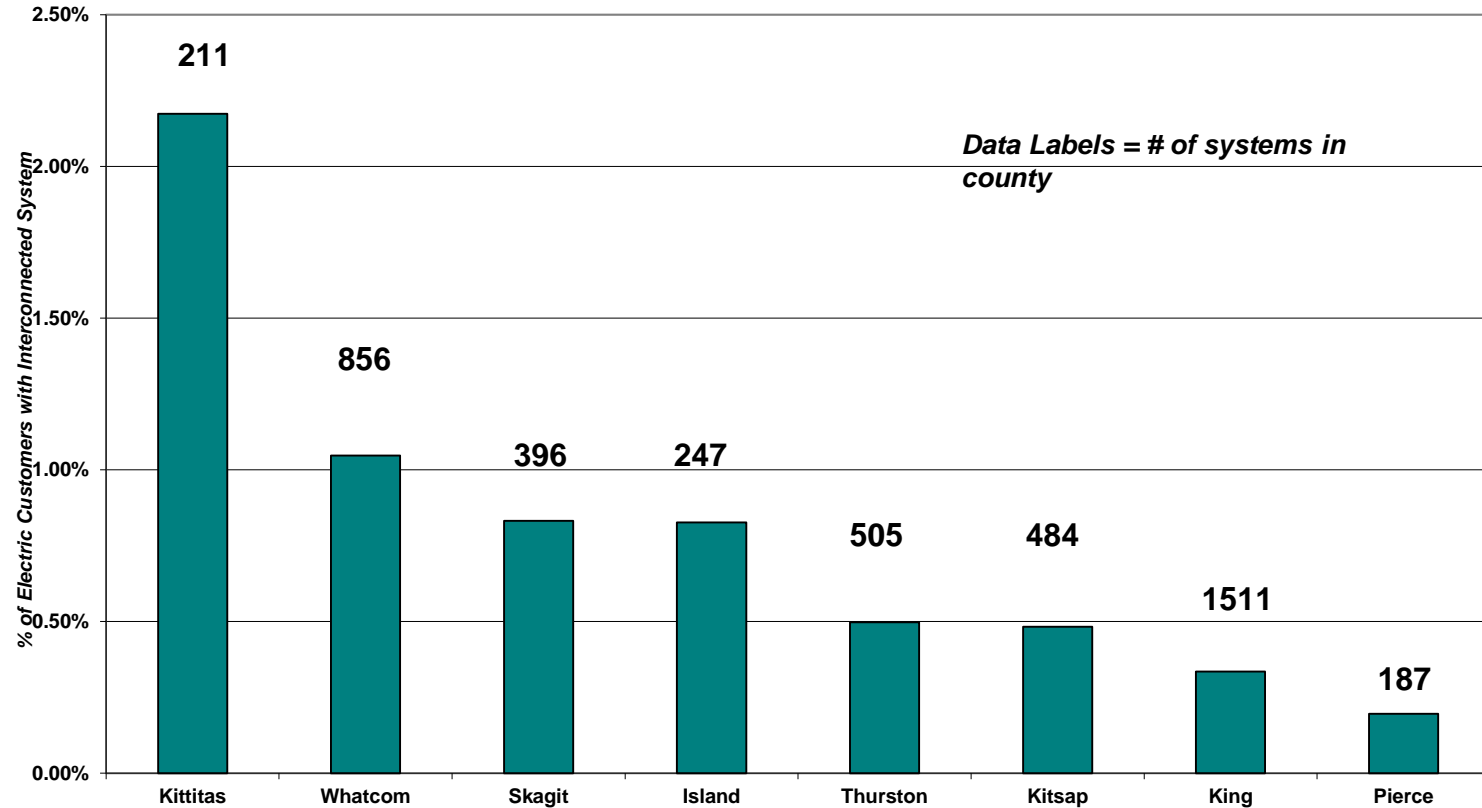


Total Systems By County_{y.t.d.}

<i>County</i>	<i>Count</i>
Island	247
King	1511
Kitsap	484
Kittitas	211
Pierce	187
Skagit	396
Thurston	505
Whatcom	856
<i>Total Systems</i>	4397

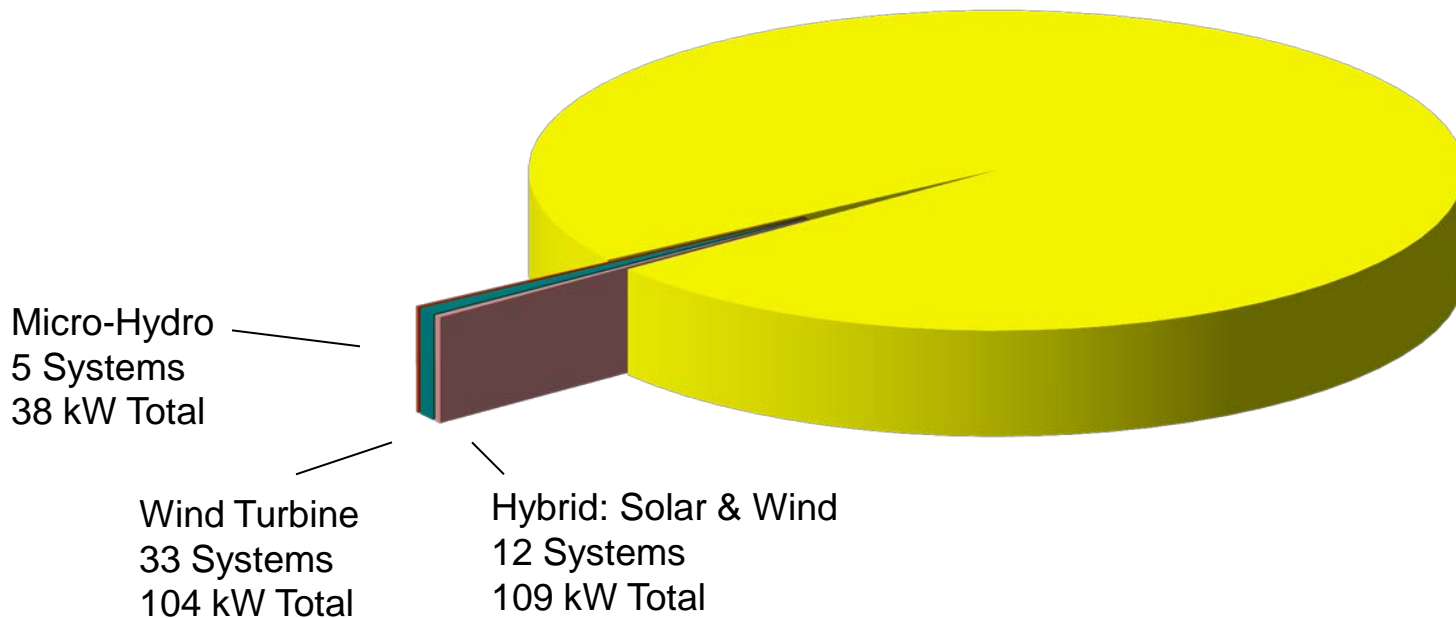
Per Capita

Leading Counties for Customer-Generated Renewable Energy



Customer Resources

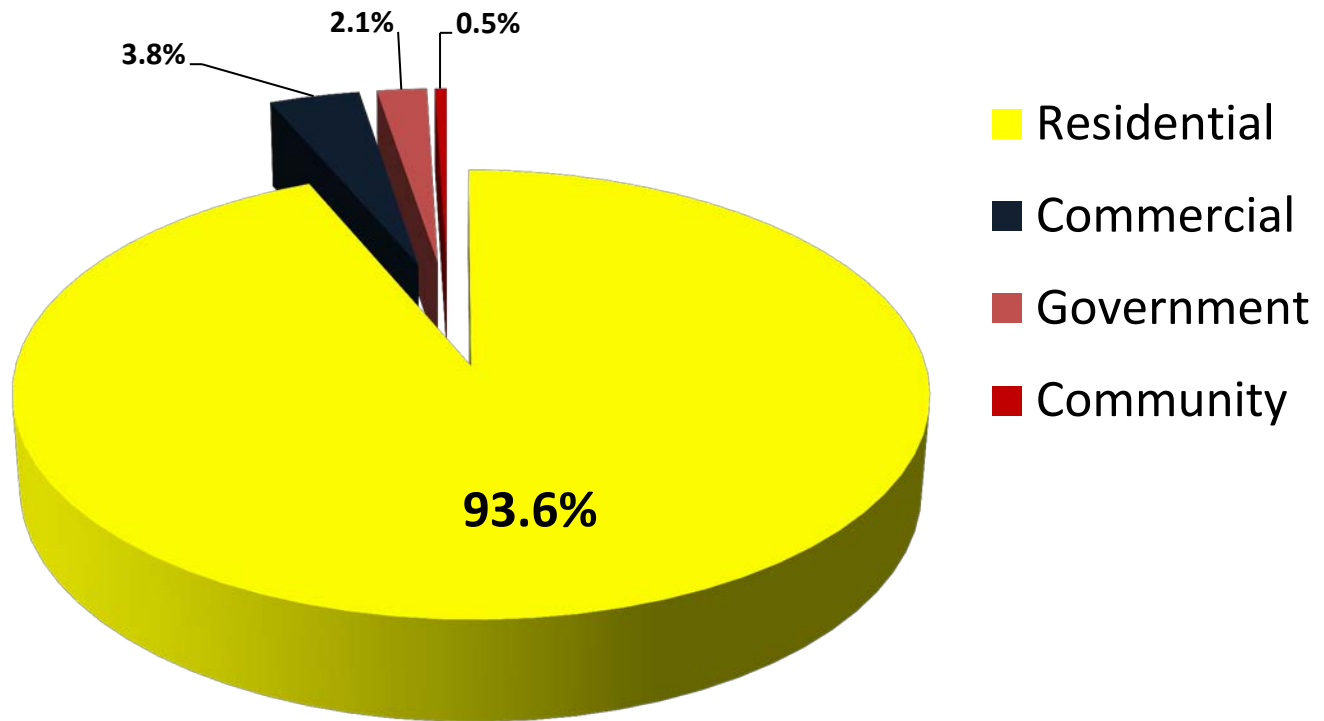
Solar PV
4347 Systems
29743 kW Total



PSE Total (4/26/2016): 4397 Systems, 30 MW Total Nameplate Capacity

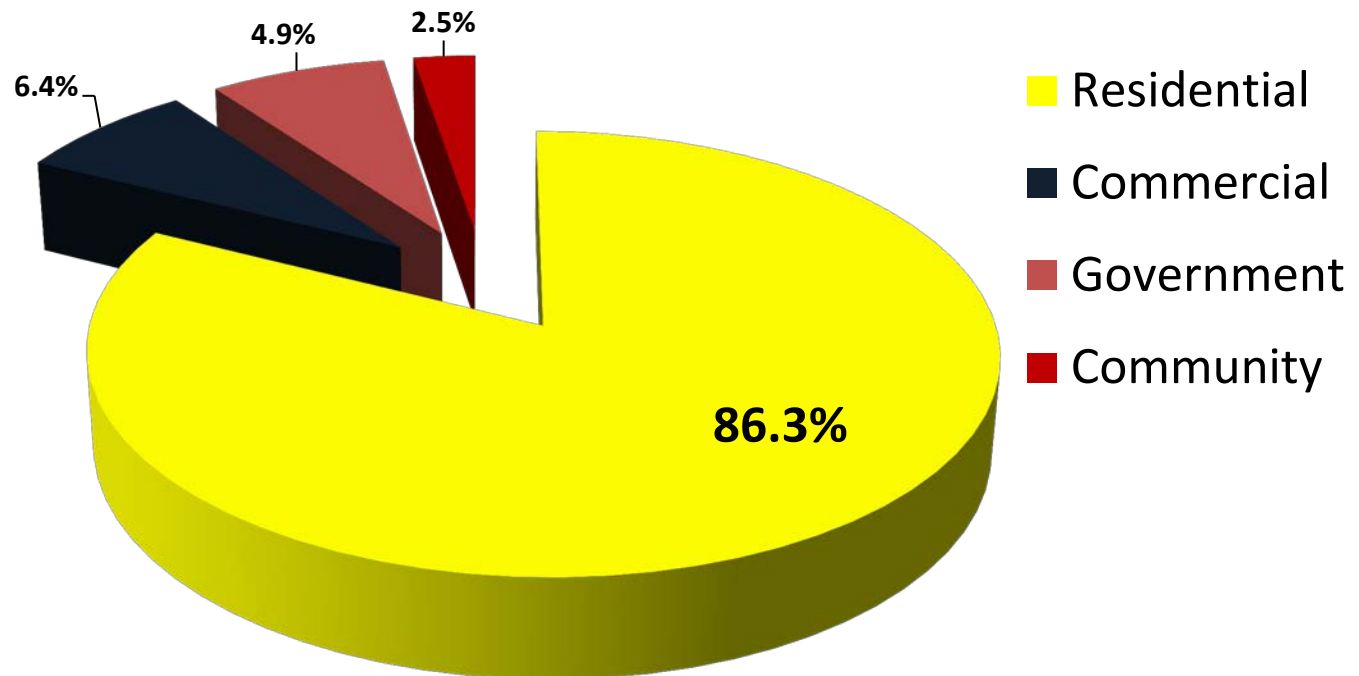
Customer Segments

By Number of Systems



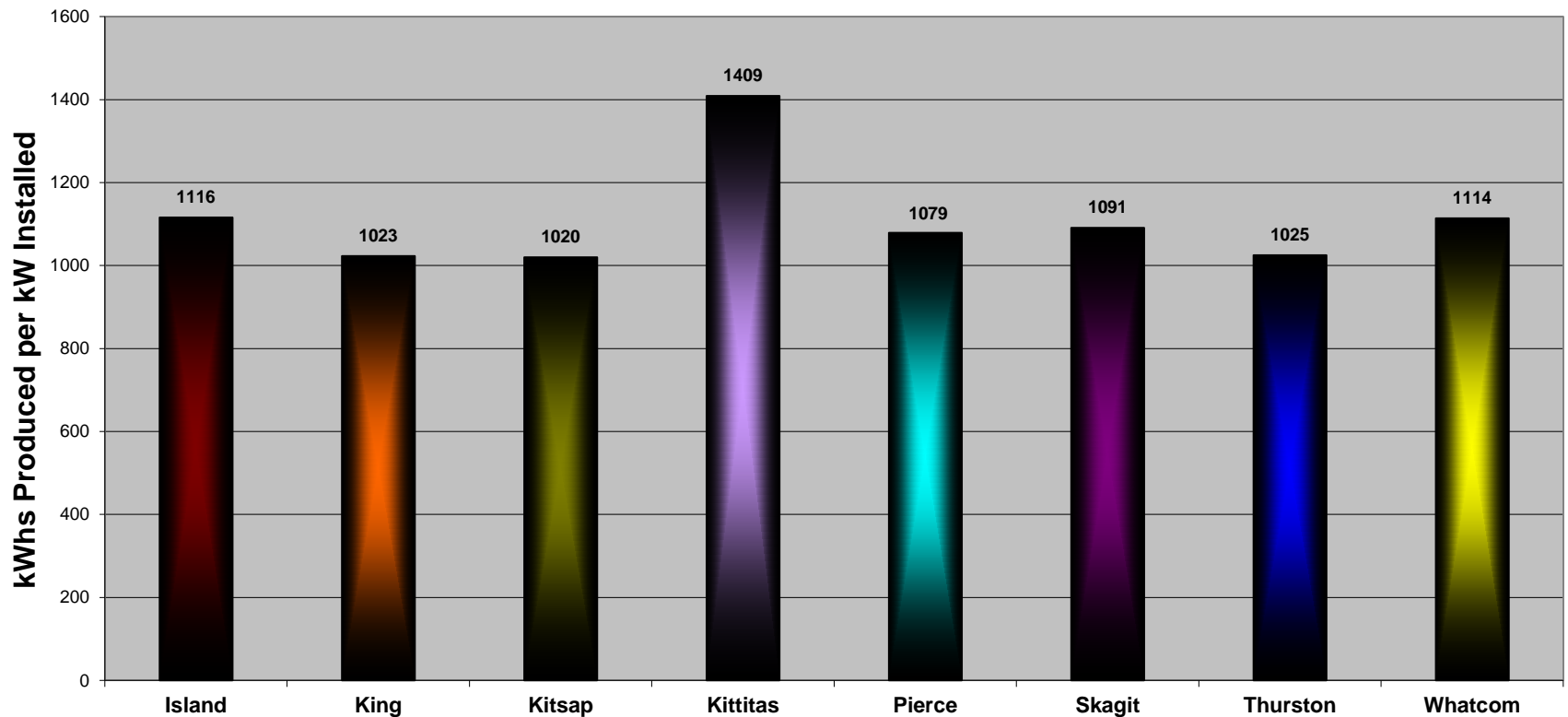
Customer Segments

By Capacity

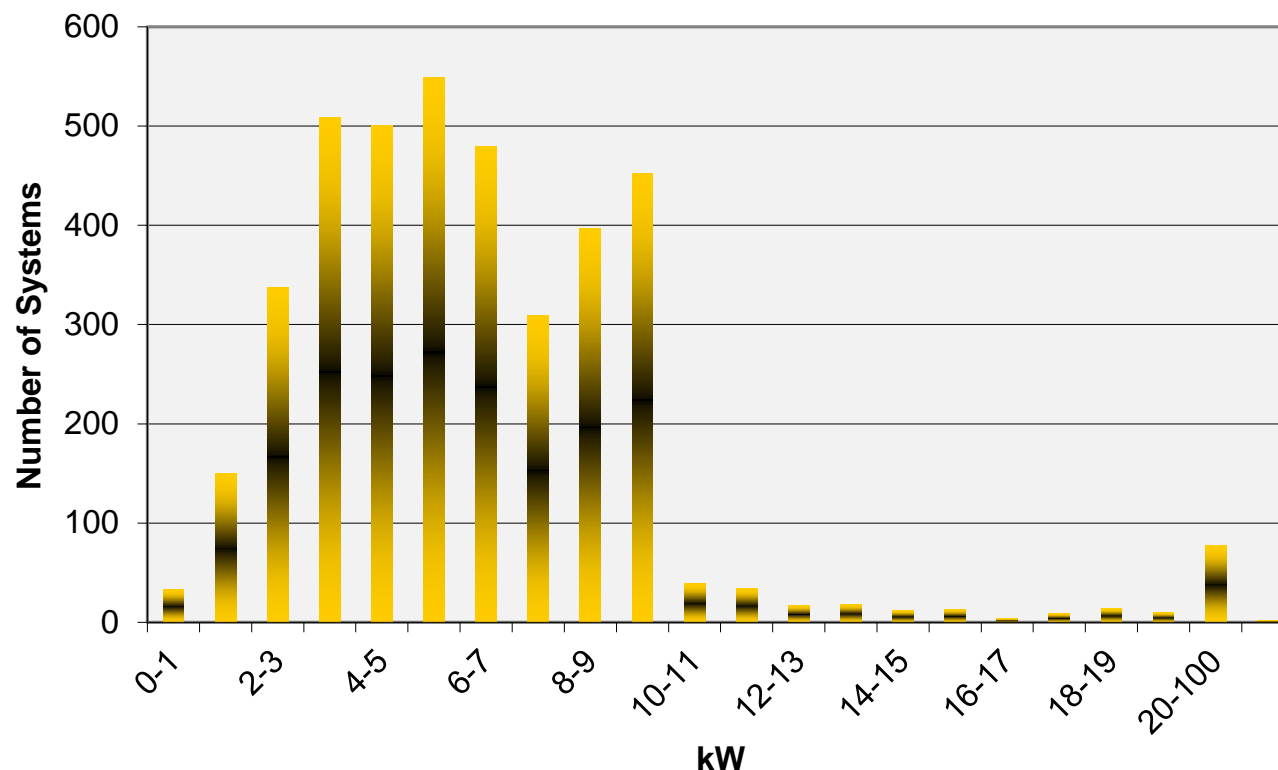


Annual Production - Solar

2014-2015 Average Solar Production by County Total Average: 1060 kWh/kW/Year



System Size



2015 Mean = 6.71 kW Median = 5.78 kW Mode = 9.9 kW

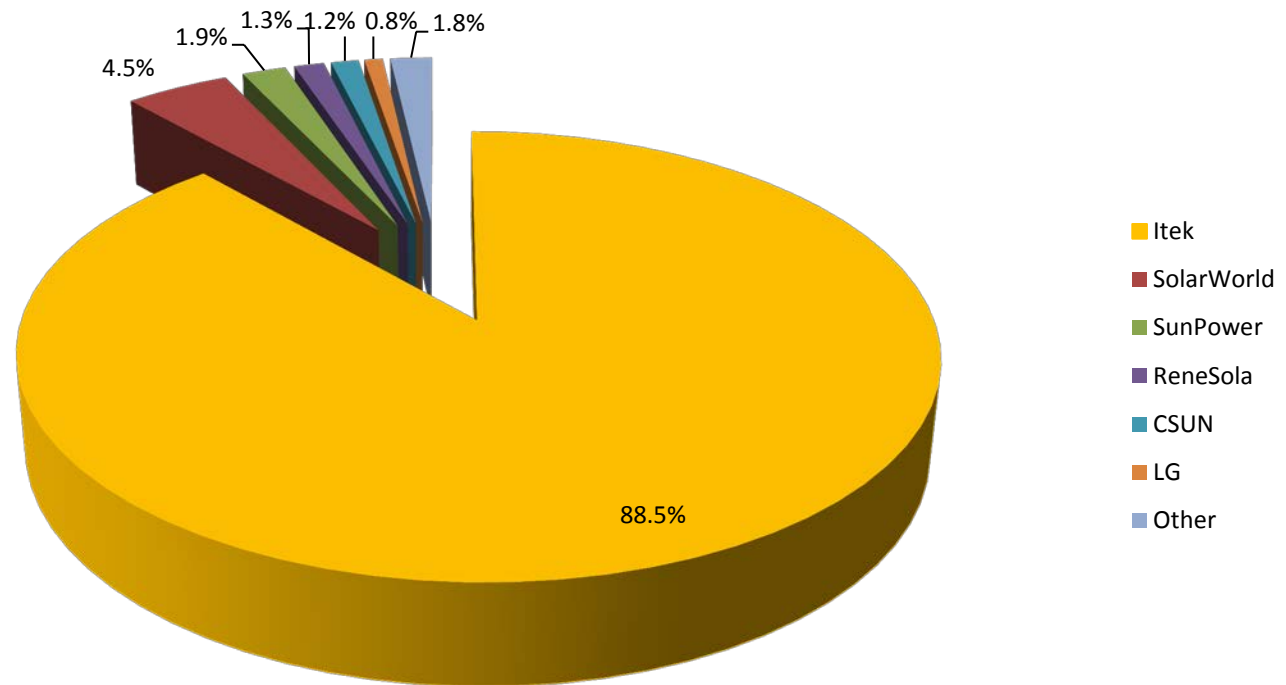
2014 Mean = 6.25 kW Median = 5.17 kW Mode = 5.4 kW

2013 Mean = 5.67 kW Median = 4.50 kW Mode = 4.32 kW

2012 Mean = 5.50 kW Median = 4.23 kW Mode = 4.32 kW

Customer Equipment - Modules

- Customer Solar Modules Installed in 2015



Interconnection Process

Schematic and agreements sent to PSE

PSE Meter Department approval of schematic

Successful inspection by Electric Jurisdiction

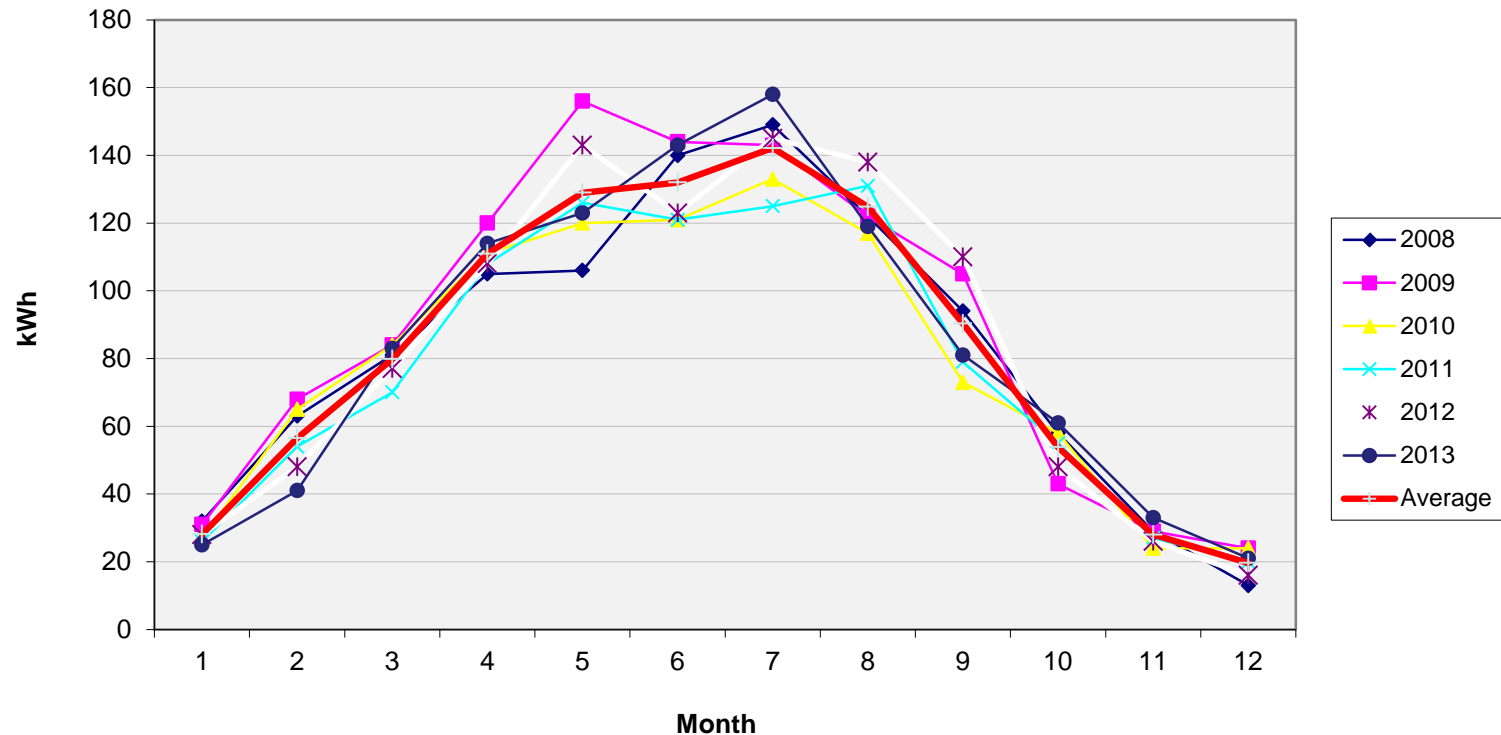
Meters ordered and installed

Meter charged

D.O.R Renewable Energy Certificate sent to PSE

Annual Production - Solar

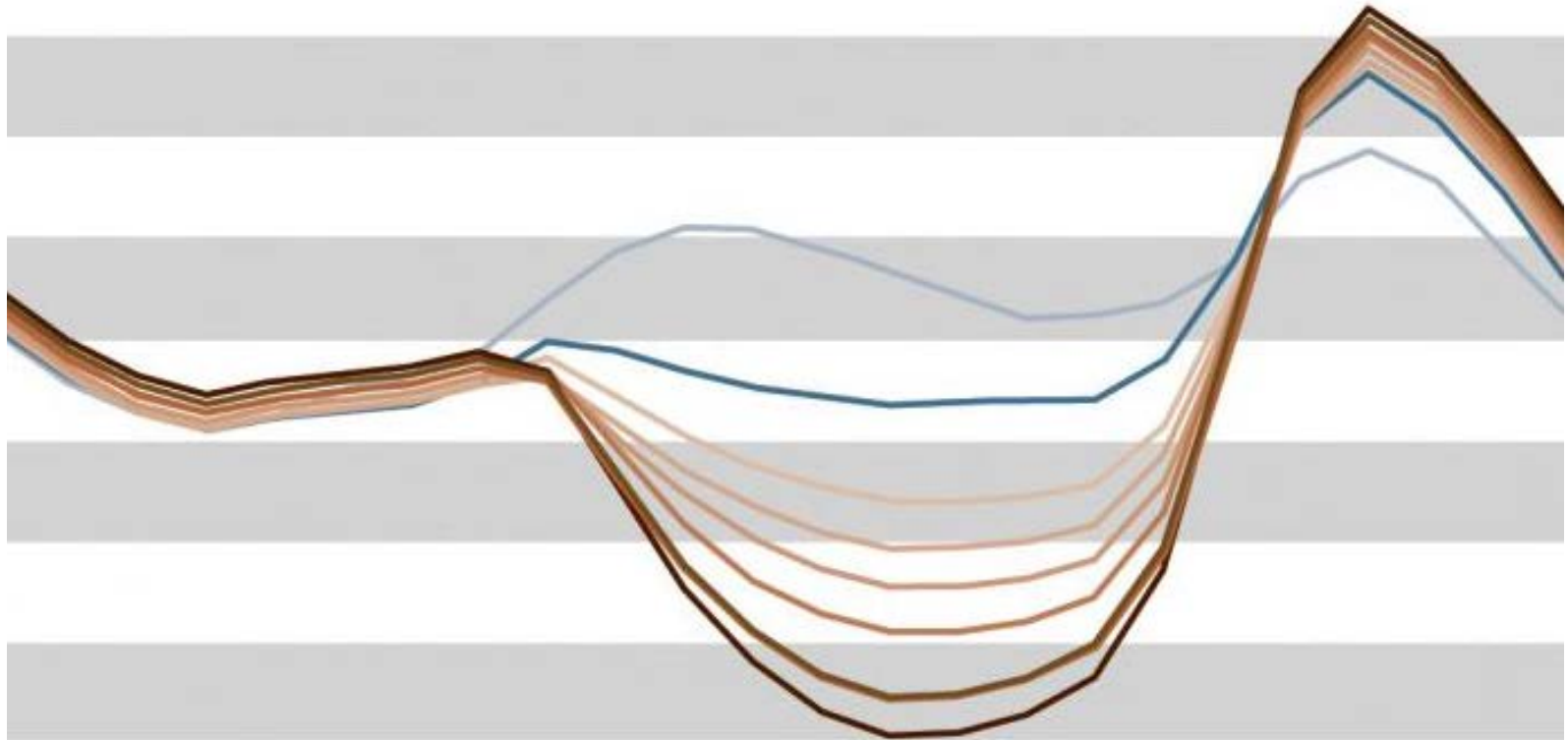
Solar PV Production kWh/kW/Month

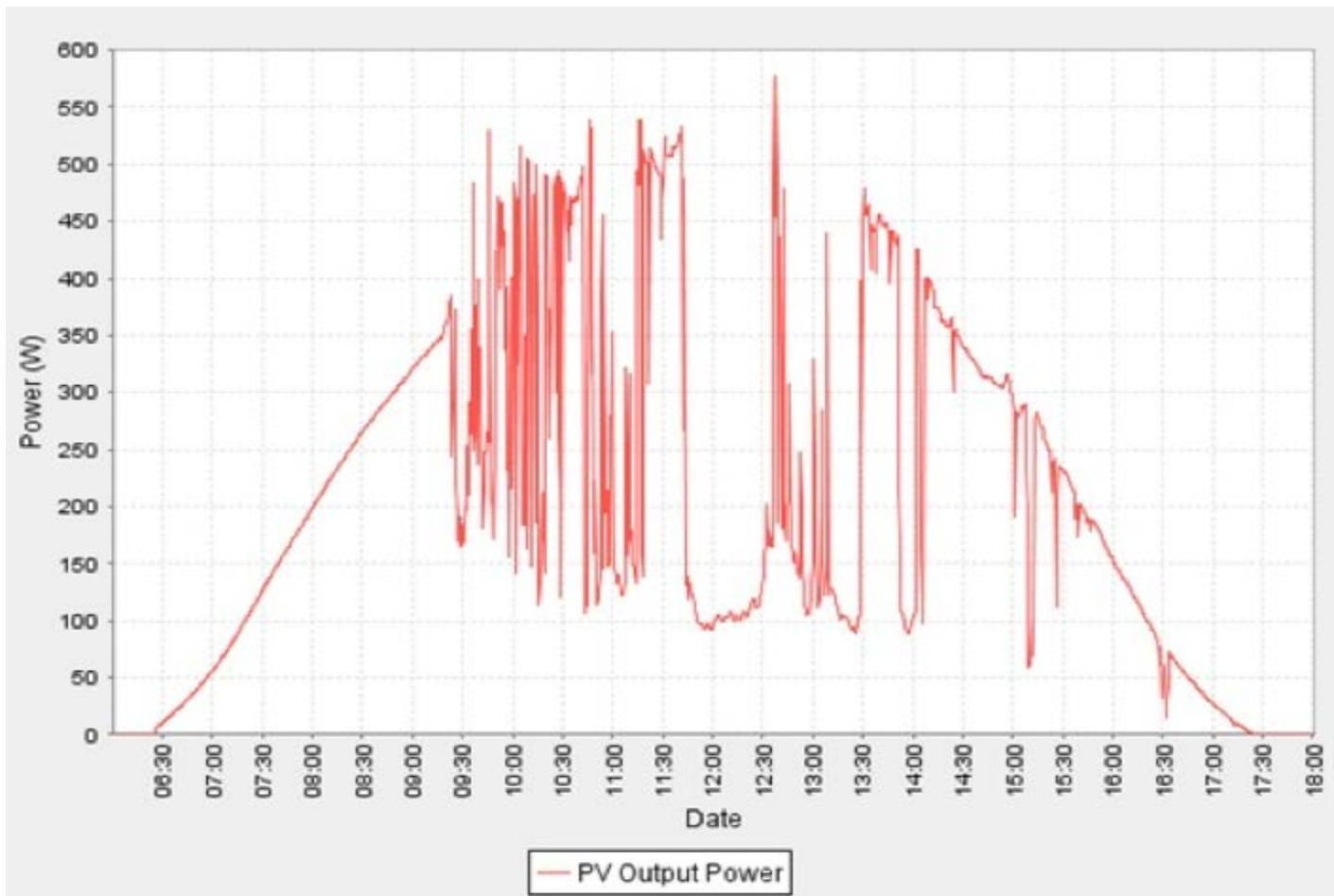


The “Duck Curve”



The “Duck Curve”





2016 Challenges

- Aggregation
- Onboarding of applications – Self Service
- Batteries
- Billing enhancements
- Meter Inventory
- AMI
- Legislation
- PQ
- Production

Questions or comments?

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