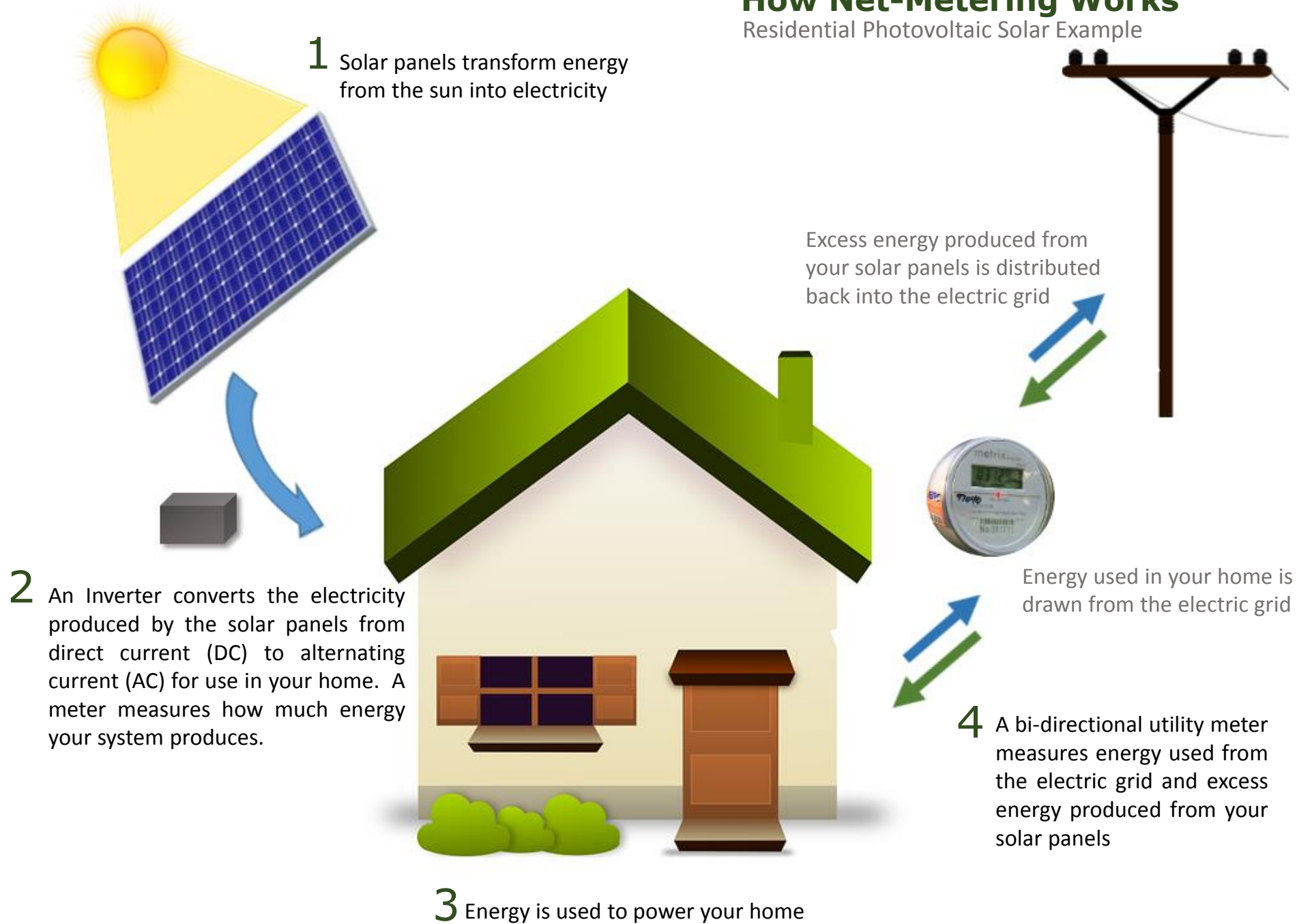


Vermont Public Service Board
Rule 5.100 – Net-metering

How Net-Metering Works

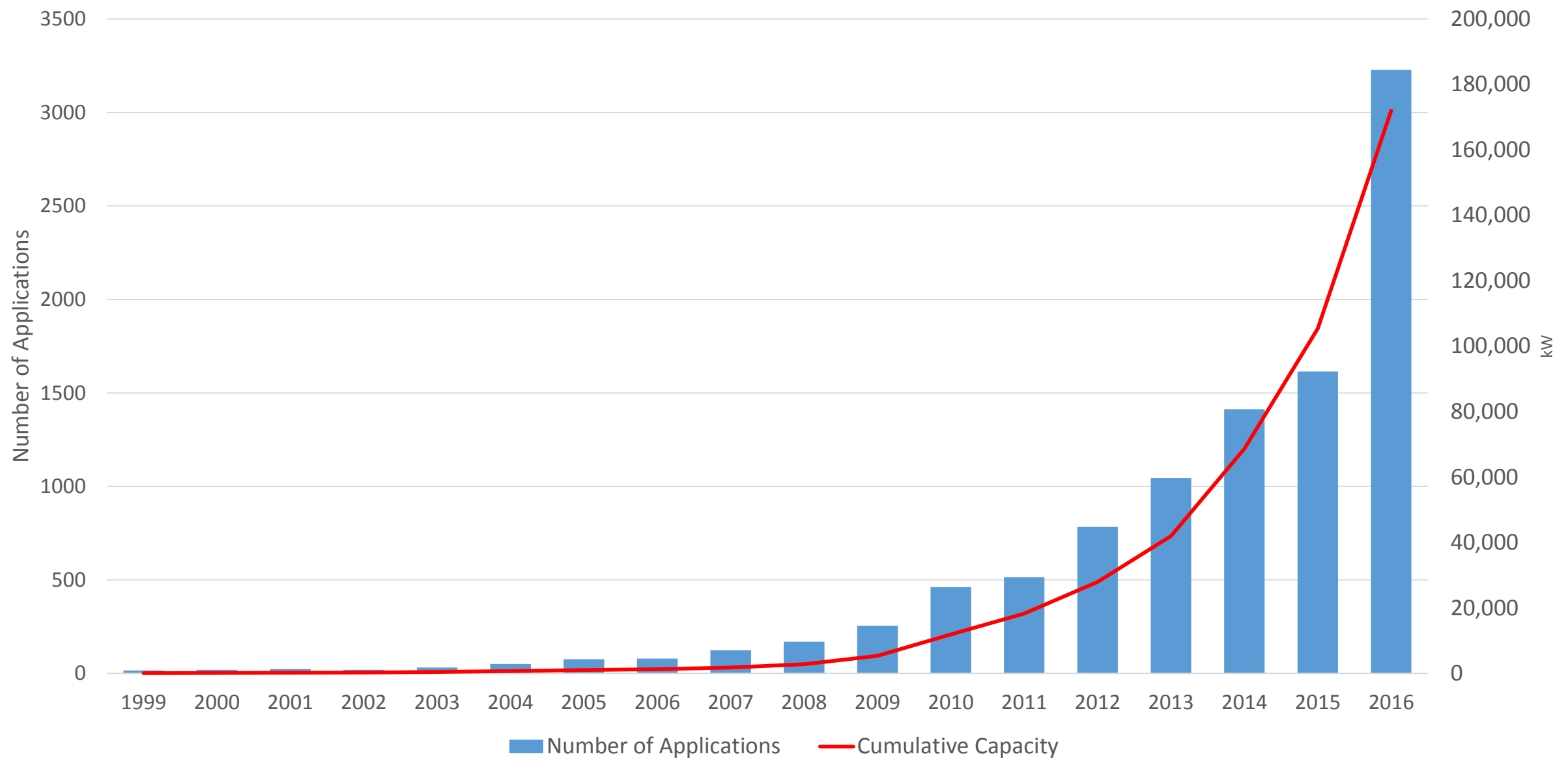
Residential Photovoltaic Solar Example



Net-Metering 1.0

- Program started in 1997
- Began with small systems and limited program size
- Over time, the law allowed larger systems and increased the program's capacity
- In 2011, customers using solar were offered an incentive payment of ~5 cents per kilowatt-hour (kWh)
 - Monetization of credits began
 - Group systems became common
- In 2014 Act 99 directed Board to start developing "Net-Metering 2.0"
- In 2015 the program filled the statutory 15% capacity cap

Number of CPG Applications and Cumulative Program Capacity by Year



Number of net-metering permits and capacity approved to date in the service territory of each Vermont distribution utility.

| | Solar | | Wind | | Methane | | Hydro | | ALL | | |
|--------------|-------------|------------------|------------|----------------|----------|---------------|-----------|----------------|-----------------|------------------|--------------|
| Company Name | Count | Capacity (kW) | Count | Capacity (kW) | Count | Capacity (kW) | Count | Capacity (kW) | Total Capacity | PEAK (kW) | % PEAK |
| Barton | 17 | 91 | 2 | 19 | 0 | 0 | 0 | 0 | 109.78 | 3040.00 | 3.61% |
| BED | 176 | 6754 | 4 | 15 | 1 | 248 | 0 | 0 | 7016.64 | 67000.00 | 10.47% |
| Enosburg | 30 | 695 | 1 | 2 | 0 | 0 | 0 | 0 | 697.12 | 5740.00 | 12.14% |
| CVPS | 887 | 7052 | 63 | 344 | 1 | 19 | 4 | 446 | 7860.92 | | |
| GMP | 6273 | 132220 | 48 | 1094 | 5 | 405 | 12 | 3421 | 137140.2 | 766200.00 | 18.92% |
| Hardwick | 83 | 1087 | 10 | 81 | 0 | 0 | 0 | 0 | 1168.43 | 6930.00 | 16.86% |
| Hyde Park | 28 | 331 | 1 | 10 | 0 | 0 | 0 | 0 | 340.54 | 2530.00 | 13.46% |
| Jacksonville | 5 | 91 | 3 | 11 | 0 | 0 | 0 | 0 | 101.93 | 1180.00 | 8.64% |
| Johnson | 12 | 701.8 | 0 | 0 | 0 | 0 | 0 | 0 | 701.8 | 2800.00 | 25.00% |
| Ludlow | 3 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 31.20 | 12400.00 | 0.25% |
| Lyndonville | 79 | 1300 | 2 | 99 | 0 | 0 | 0 | 0 | 1398.15 | 13480.00 | 10.37% |
| Morrisville | 52 | 835 | 4 | 38 | 0 | 0 | 0 | 0 | 872.90 | 9170.00 | 9.52% |
| Northfield | 25 | 111 | 0 | 0 | 0 | 0 | 0 | 0 | 111.03 | 5330.00 | 2.08% |
| Orleans | 3 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00 | 3570.00 | 0.00% |
| Stowe | 62 | 628 | 0 | 0 | 1 | 20 | 0 | 0 | 647.64 | 18680.00 | 3.47% |
| Swanton | 23 | 1602 | 0 | 0 | 0 | 0 | 0 | 0 | 1601.83 | 10430.00 | 15.36% |
| VEC | 761 | 10365 | 45 | 332 | 1 | 62 | 0 | 0 | 10759.03 | 83170.00 | 12.94% |
| WEC | 268 | 2020 | 8 | 70 | 0 | 0 | 0 | 0 | 2090.70 | 16010.00 | 13.06% |
| TOTAL | 8787 | 165913.71 | 191 | 2113.96 | 9 | 753.75 | 16 | 3867.65 | 172670.0 | 1027660.0 | 16.7% |

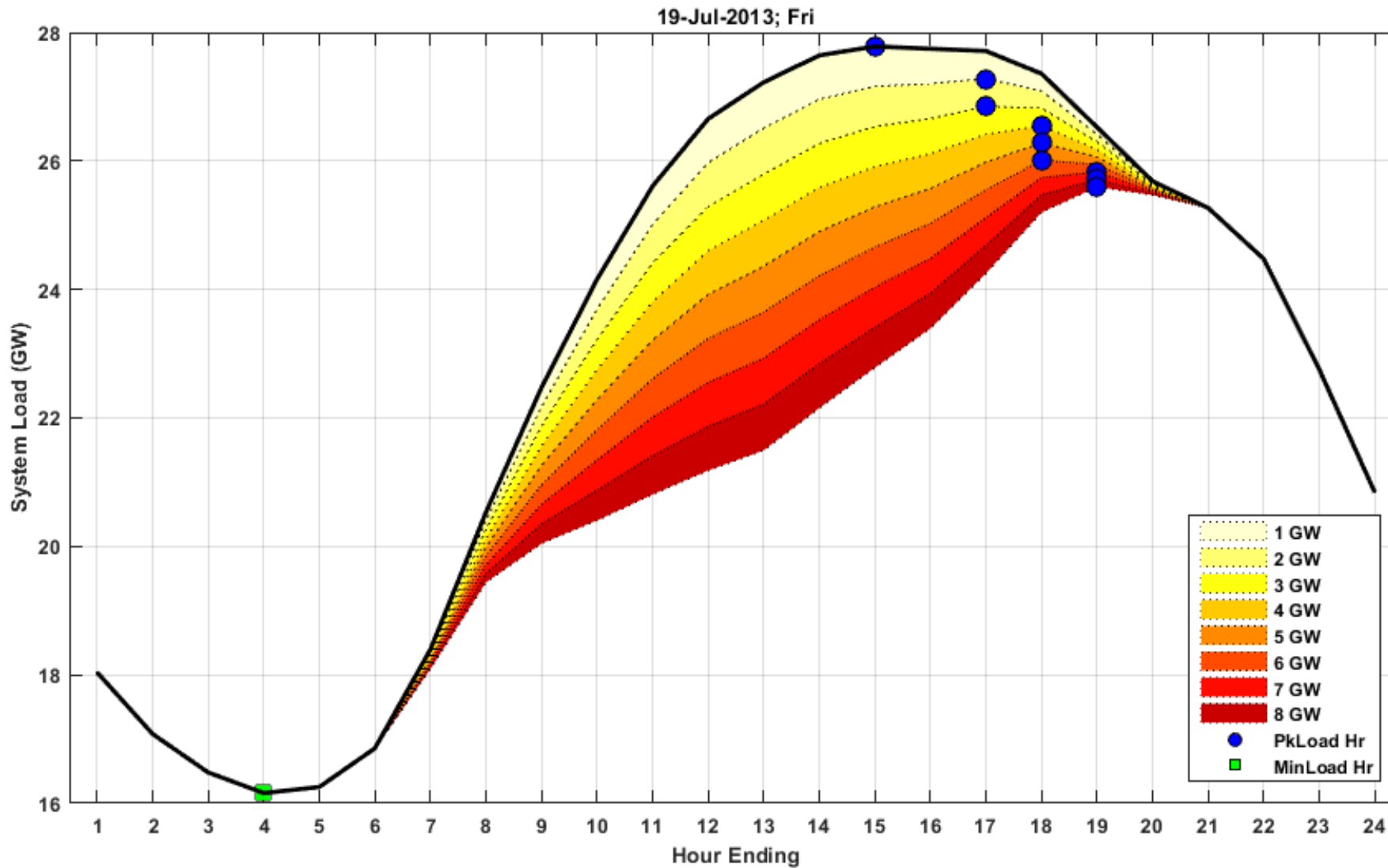
Recent Developments

- Significant decreases in installation cost of solar
- Development of competitive renewable energy markets in Vermont:

| Resource | Price per kWh | Notes |
|--------------------------------------|---------------|---|
| Section 219a Net-Metering | ~22 cents | Utility does not receive Renewable Energy Certificate (“REC”) |
| Large Scale Wind | 8.8-11 cents | Includes REC |
| Energy Efficiency | 4.4 cents | Not electricity, no RECs |
| Standard-Offer Solar 2.2 | 10-13 cents | Utility receives REC |
| Other Tier II Solar Resources | ~12 cents | Utility receives REC |

- Robust build-out of solar in Vermont and New England has changed the value of the benefits offered by building more solar

Increased net-metering will push the time of the peak load to later in the day



Goals of Net-Metering 2.0

- Mitigate potential rate impacts of net-metering
- Reflect changes in costs of technology
- Promote the beneficial siting of net-metering systems
- Reduce Vermont's greenhouse gas emissions
- Facilitate public participation in the review of net-metering applications
- Foster a sustainable renewable energy industry in Vermont

Summary of Significant Changes

- Incentive structure
 - Incentives for better siting decisions
 - Incentives to support Vermont's Renewable Energy Standard and reduce greenhouse gas emissions
 - Designed to reflect economies of scale and future changes in the cost of technology
- Rate structure
 - Reduce the cost shift between net-metering customers and customers who don't net-meter
 - Periodic review of incentives to reflect changes in technology and markets
- Application Procedures
 - Designed to encourage better siting decisions
 - Designed to facilitate public participation in Board proceedings

Structure of the Rule

- Five Parts
 - I. General Provisions
 - II. Application Procedures
 - III. Public Participation
 - IV. Program Requirements (rates, billing, groups)
 - V. Compliance Procedures

Application Procedures

- Registrations (Section 5.105)
 - Ground mounted solar up to 15 kW
 - Roof mounted solar up to 500 kW
 - Hydro up to 500 kW
- “Application Form” (Section 5.106)
 - Any ground mounted system (solar, wind, biomass, CHP) over 15 kw and up to 50 kW
 - No hydro
- “Petitions” (Section 5.107)
 - Everything over 50 kW, except hydro

Registration Process

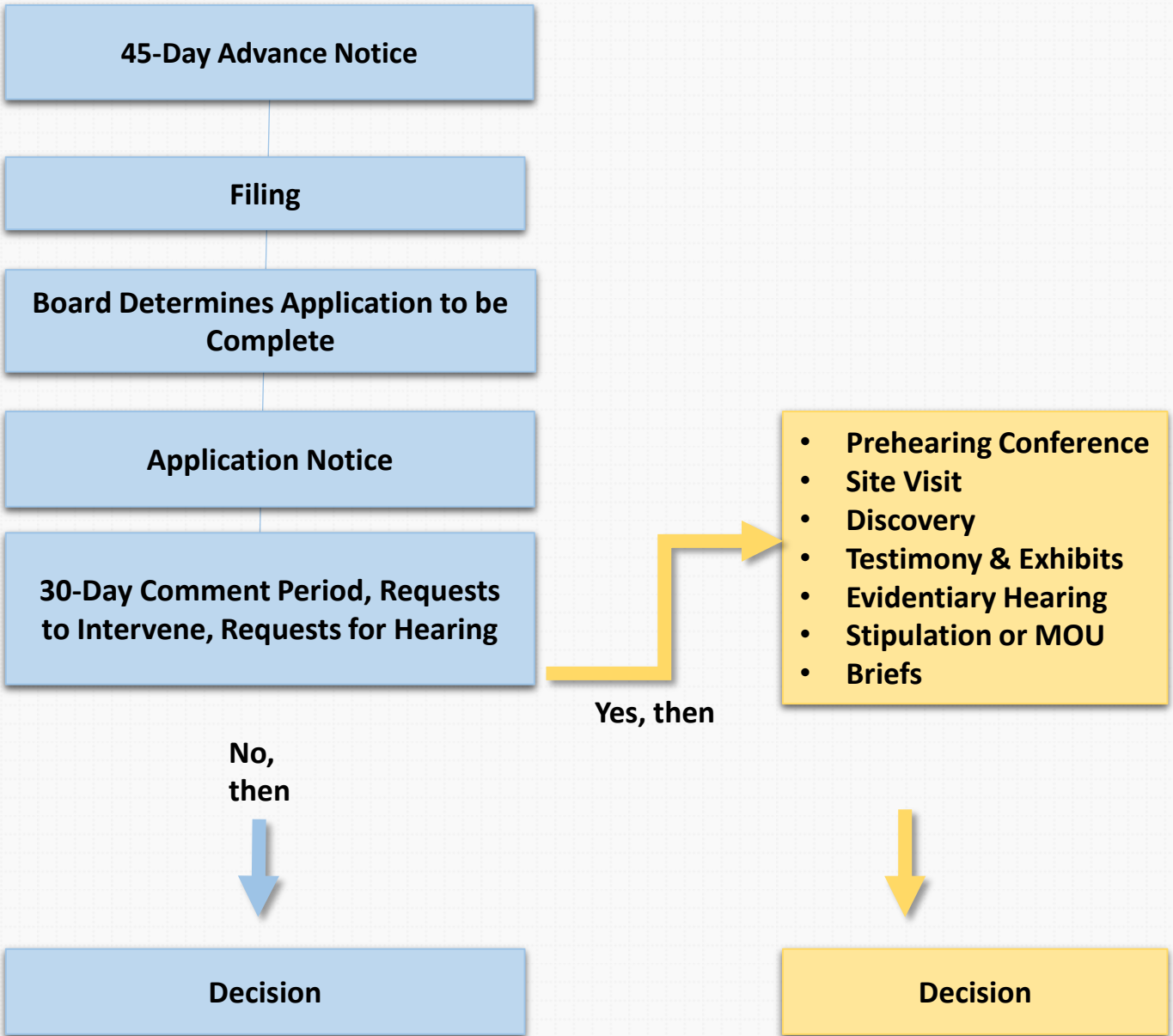
Systems up to 15 kW

- 10 business-day comment period
- DPS, ANR, Utility
- If there is an objection, then no construction until objection resolved
- If no objection, construct on the 11th business day

Systems greater than 15 kW

- 30 calendar-day comment period
- DPS, ANR, Utility
- If there is an objection, then no construction until objection resolved
- If no objection, construct on the 31st calendar day

Application and Petition Procedures



Part III – Public Participation

- Part III is intended to provide guidance to the public about how to participate in the review of net-metering CPG applications

Pre-Existing Systems

- Pre-existing systems are exempt from certain provisions of the rule:
 - Pre-existing systems continue to receive the Section 219a “Solar Adder” for 10 years
 - Pre-existing systems are not subject to non-bypassable charges for 10 years
 - Pre-existing systems are not subject to REC or siting adjustors
- Pre-existing systems will receive the blended residential rate for excess generation after 10 years

Rate Structure

- New rate structure can be described as “retail plus” or “retail minus” depending on the system
- To calculate the value of a net-metering credit, start with the “Blended Residential Rate”
 - Company’s general residential service rate,
 - Blend of company’s residential block rates, or
 - Statewide average rate (14.9 cents)

Siting and REC Adjustors

| Siting Adjustor | |
|------------------------------|---------------------|
| Type of Project | Adjustor Value |
| < 15 kW | 1 cent per kWh |
| 15 – 150 kW “well sited” | 1 cent per kWh |
| 15-150 kW “greenfield” | (-1) cent per kWh |
| 150 – 500 kW “well sited” | (- 3) cents per kWh |
| Hydroelectric facilities | 0 cents per kWh |

| REC Adjustor | |
|-------------------------|------------------|
| Transfer REC to utility | +3 cents per kWh |
| Customer retains REC | -3 cents per kWh |

Examples of rates available to net-metering systems

All values in cents per kWh.

| Type of Net-Metering System | Blended residential rate | Siting adjustor | Positive or negative REC adjustors | Total with either positive or negative REC adjustor |
|------------------------------|--------------------------|-----------------|------------------------------------|---|
| < 15 kW | 14.9 | 1 | 3 or (-3) | 18.9 or 12.9 |
| 15 – 150 kW “well sited” | 14.9 | 1 | 3 or (-3) | 18.9 or 12.9 |
| 15-150 kW “greenfield” | 14.9 | (-1) | 3 or (-3) | 16.9 or 10 .9 |
| 150 – 500 kW “well sited” | 14.9 | (-3) | 3 or (-3) | 14.9 or 8.9 |

Non-Bypassable Charges

Bill Details

Highlighted items are non-bypassable

E01 Residential Net Metering

| | |
|--|-----------------|
| Customer Charge: 32 Days @ \$0.433 | \$13.86 |
| 741 Total KWH Consumed | |
| 106 Total KWH Generated | |
| 635 Total KWH Net Billed @ \$0.1484 | \$94.23 |
| 0 Total KWH Excess Credit @ \$-0.1484 | |
| Energy Efficiency Charge 635 x \$0.01281 | \$8.13 |
| Power Adjustment | \$0.89 |
| Electric Assistance Program Fee | \$1.00 |
| Generation | |
| 192 Total KWH Generation | |
| 192 Solar Incentive KWH @ \$-0.053 | -\$10.18 |
| New Charges/Adjustments due by 12/26/16 | \$107.93 |

Total non-bypassable charges for this bill are \$22.99

Part IV – Compliance Procedures

- Section 5.134 establishes procedures for enforcement of CPG conditions