The Standard-Offer Program

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VT Renewable Energy Programs

Renewable Energy Standard (RES)

- Tier I – Total renewable energy requirement
- Tier II – Distributed generation < 5 MW built after 2015
  - Net-metering – Up to 500 kW / Meant to offset a customer's electric consumption
  - Standard offer – Up to 2.2 MW / Long-term contracts for small renewables
  - Utility Owned Projects
  - Bilateral Contracts
- Tier III – Energy Transformation

Standard-Offer Program Summary

- Vermont utilities buy renewable power from an “eligible generator” at a specified price for a specified period of time (also known in other jurisdictions as “feed-in tariff”)
- Created in 2009, with 50 MW initial program cap
- Expanded in 2012, with annual increases until 127.5 MW is reached
- Each project can be no bigger than 2.2 MW
- Only renewable energy technologies eligible
- 79 contracts with a cumulative capacity of almost 92 MW issued so far*

*A summary of all standard-offer contracts issued is available at: http://vermontspeed.squarespace.com/storage/projects-with-contracts/STANDARD%20OFFER%20PROJECTS%20WITH%20CONTRACTS.xlsx

Eligible Technology Categories

Solar PV

Wind: 100 kW or smaller

Wind: 100 kW to 2.2 MW

Farm Methane: 150 kW or smaller

Farm Methane: >150 kW

Landfill Methane

Food Waste Methane

Biomass

Hydro

Standard-Offer Contracts

- Prices set by competitive bidding (between $0.08 and $0.11 / kWh in last RFP)
- Up to 25-year term
- Administered by statewide purchasing agent (“Standard Offer Facilitator”) appointed by the Commission
- Costs distributed among Vermont utilities based on pro-rata share of electric sales
- Utilities buy all elements of generation (energy, capacity, RECs), with guaranteed rate recovery

2009: The Program is Established

- 50 MW of available program capacity
- Initial prices set by statute, $0.24 to $0.30 per kWh for solar
- 200 MW of resources applied the first day (mostly solar)
- October 2009 – 50 MW issued through lottery
- Large waiting list created, with projects dropping from list
- Commission established new prices in 2010, with review every two years
- By 2015 the initial 50 MW was built and operating

2012: Significant Changes to the Program

- Increased the available capacity from 50 MW to 127.5 MW
  - 5 MW available in 2013, 2014, and 2015
  - 7.5 MW available in 2016, 2017, and 2018
  - 10 MW available in 2019, 2020, 2021, and 2022
- Requires allocation among different technology categories
- Allows market-based pricing methodology (RFP implemented in 2013)
- Requires review of avoided-cost price caps every year

Market-Based Mechanism

- Each year the Commission issues an annual request for proposals (RFP)
- RFP specifies the amount of capacity available, technology set-asides, and price caps
- Eligible project:
  - New renewable project located in Vermont
  - Bids at or below price cap
  - Demonstrates site control
  - Demonstrates financial security to bid in RFP
- Lowest-priced bids are awarded annual capacity
- Each project must obtain Certificate of Public Good in order to construct
- Standard-offer contract award expires if project not built in 3 years

Determination by PUC of Avoided-Cost Prices

- Section 8005a(f)(2)(B) defines “avoided cost” as:

  “the incremental cost to retail electricity providers of electric energy or capacity or both, which, but for the purchase through the standard offer, such providers would obtain from distributed renewable generation that uses the same generation technology as the category of renewable energy for which the Commission is setting the price”

- Definition of avoided cost includes the consideration of each of the following:
  - Cost data of the Vermont composite electric utility system
  - Terms of the contract, including the duration of the obligation
  - Availability, during the system's daily and seasonal peak periods, of capacity or energy purchased, and the estimated savings from mitigating peak load
  - Relationship of the availability of energy or capacity purchased through the standard offer to the ability of the Vermont composite electric utility system or a portion thereof to avoid costs
  - Costs or savings resulting from variations in line losses and other impacts on the transmission or distribution system from those that would have existed in the absence of purchases through the standard offer
  - Supply and cost characteristics of plants eligible to receive the standard offer

Farm Methane Has Different Rules

- Farm methane projects can receive a 20-year contract at any time by contacting the Standard-Offer Facilitator
- No cap on number of projects
- Projects do not have to participate in the annual RFP
  - Projects larger than 150 kW: $0.145 per kWh
  - Projects 150 kW or smaller: $0.199 per kWh
- Renewable Energy Credits (RECs) accrue to the farmer and not to the Vermont utilities
- Program includes 8 farm projects developed under the former CVPS "Cow Power" program

Hydro and Ryegate Have Different Rules

- Small existing hydroelectric (5 MW or less) eligible for standard offer under 30 V.S.A. § 8005a(p)
  - Rates adjusted annually by the Commission based on statutory formula
  - Two hydro plants currently under 20-year standard-offer contracts
- Baseload Renewable Power
  - Authority under 30 V.S.A. § 8009
  - Utilities must purchase electricity from an eligible biomass plant at a specified price for a specified period of time
  - Price established at the avoided cost of the biomass plant
  - Ryegate Plant currently under 10-year contract

General Trends (and Challenges)

- RFP has resulted in increasingly lower prices
- Significant participation by solar projects
- Allocation of available program capacity to non-solar technology categories has been challenging
- Annual RFP process involves significant administration by the Commission
  - Includes review of price caps and technology allocation

Exemptions

- Section 8005a(k)(2)(B) allows for utilities to be exempt from program costs:

  …if, during the immediately preceding 12-month period ending October 31, the amount of renewable energy supplied to the provider by generation owned by or under contract to the provider, *regardless of whether the provider owned the energy's environmental attributes*, was not less than the amount of energy sold by the provider to its retail customers.

- In 2018, the General Assembly temporarily suspended new utilities from becoming exempt and directed the Commission review this statutory provision
- Legislative Report and proposed statutory revisions are available at: https://legislature.vermont.gov/assets/Legislative-Reports/Report-on-exemptions-from-the-Standard-Offer-Program.pdf

Net-Metering in Vermont

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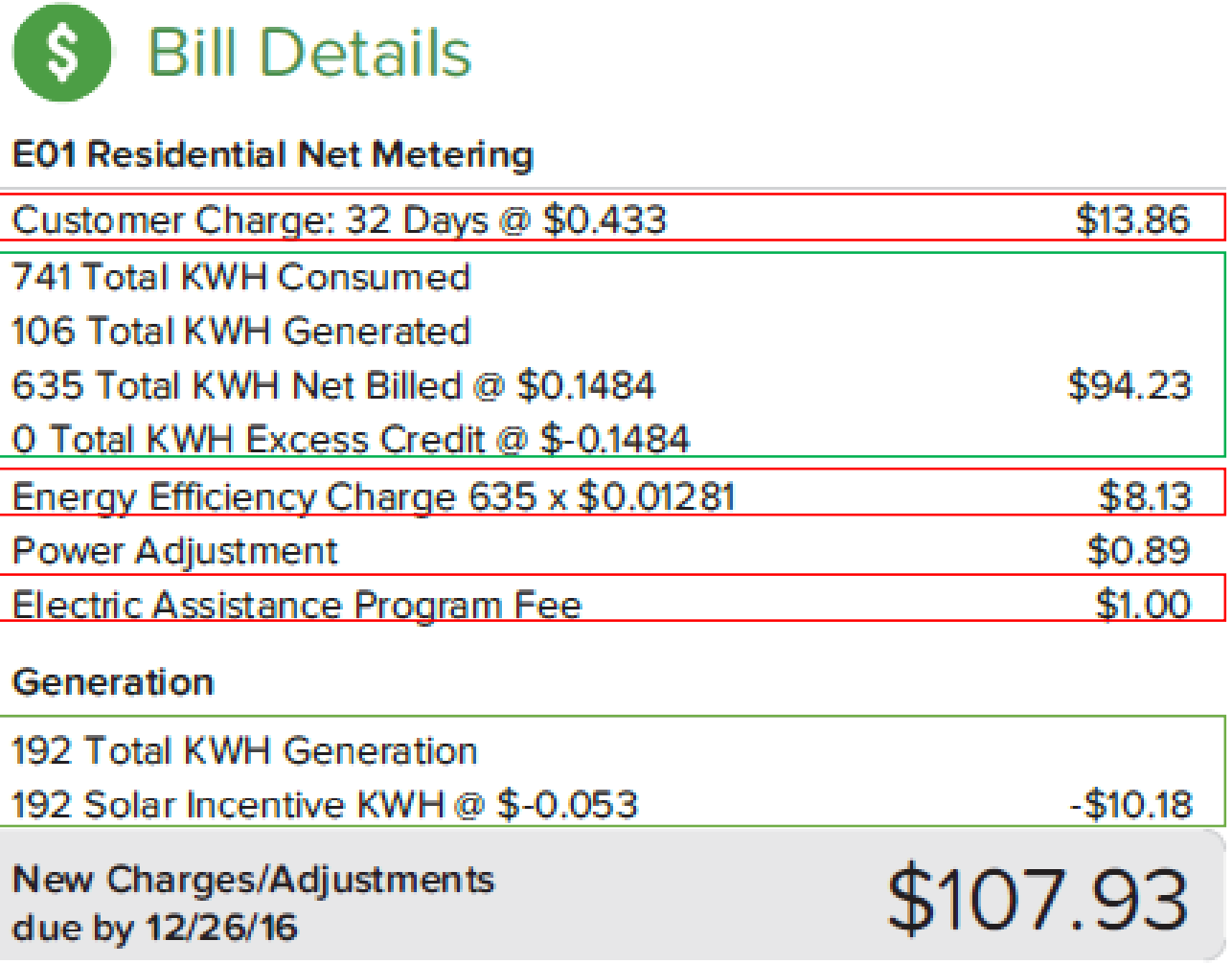
Net-Metering: A Billing Arrangement



Bill Details

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

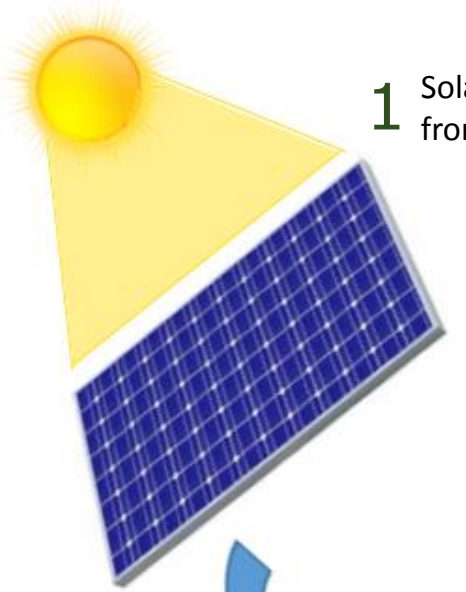
The kWhs delivered to the utility reduce the amount of electricity billed

"Non-bypassable charges" (in red boxes) are not offset by net-metering credits

Incentives are credited to customer separately

Individual Net-Metering

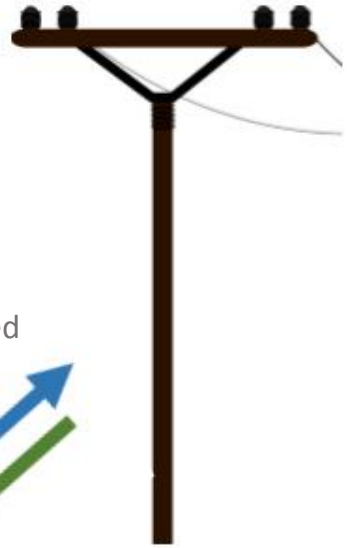
1 Solar panels transform energy from the sun into electricity



2 An Inverter converts the electricity produced by the solar panels from direct current (DC) to alternating current (AC) for use in your home. A meter measures how much energy your system produces.

3 Energy is used to power your home

Excess energy produced from your solar panels is distributed back into the electric grid



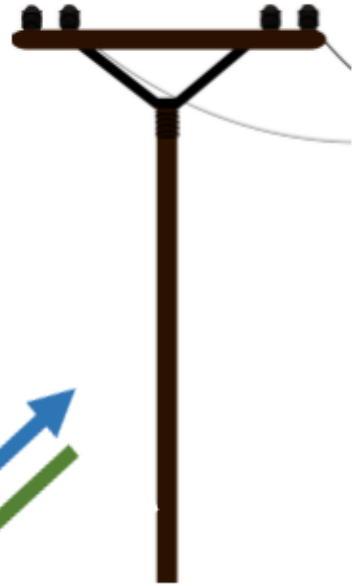
Energy used in your home is drawn from the electric grid

4 A bi-directional utility meter measures energy used from the electric grid and excess energy produced from your solar panels

Group Net-Metering

1 Solar panels transform energy from the sun into electricity

2 An Inverter converts the electricity produced by the solar panels from direct current (DC) to alternating current (AC) for export onto the distribution system. A meter measures how much energy the system produces.



3 Credits are applied to group members electric bills. Group members are located anywhere in the utility's service territory.

Bill Details 1234 MAIN STREET

New Charges	
119 Total KWH Consumed	
291 Total KWH Generated	
0 Total KWH Net Billed @ $0.1484	
172 Total KWH Excess Credit @ $-0.1484	-$25.52
Customer Charge: 29 Days @ $0.433	$12.56
Electric Assistance Program Fee	$1.00
376 Total KWH Generation	
376 Solar Incentive KWH @ $-0.06	-$22.56
New Actual Charges	**-$34.52**

Adjustments	
Transfer Credit To/From Net Meter Bank	$48.08
Total Adjustments	**$48.08**

*Please note that non-bypassable charges cannot be paid with net metering credits

Net-Metering Program History

- 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"
- 2015 – Program exceeds statutory 15% capacity cap
- 2017 – Net-Metering 2.0 took effect
- 2018 – First biennial update

Number of Net-Metering CPG Applications					
System Size	FY18	FY17	FY16	FY15	FY14
NM Generation Projects >50 kW through 500 kW	191	145	204	126	58
NM Generation Projects >15 kW through 50 kW	107	51	32	40	65
NM Generation Projects <15 kW	2,973	3,054	1,998	1,238	925
Total	3,271	3,250	2,234	1,404	1,048
Capacity of Net-Metering CPG Applications (kW)					
System Size	FY18	FY17	FY16	FY15	FY14
NM Generation Projects >50 kW through 500 kW	46,690	30,407	52,339	28,803	10,271
NM Generation Projects >15 kW through 50 kW	3,261	1,591	846	1,027	1,243
NM Generation Projects <15 kW	21,106	21,314	12,722	7,904	5,688
Total	71,057	53,312	65,907	37,735	17,202