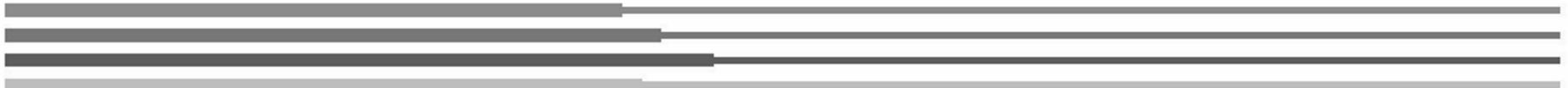


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Docket No. 4774 – 2018 Renewable Energy Growth Program

**Rhode Island Public Utility Commission
Public Hearing
January 24, 2018**



Overview of Presentation

- System Sizing Issues
- Small Solar Class Capacity Notifications
- Program Enrollment in 2017
- Community Remote Distributed Generation Systems and the Proposed Minimum Bill Credit

RE Growth System Sizing Highlights



- To receive bill credits, RE Growth systems must be sized like Net Metering systems to not produce more than the 3-year annual average use of the customer
- Net Metered systems are measured in Alternating Current (AC)
- RE Growth Systems are measured by Direct Current (DC)
- Capacity factor between DC and AC accounts for losses in the system and inverter efficiency, and inverter sizes are typically smaller than the DC rating of the panels
 - RE Growth average is 115% DC/AC ratio, or an 87% derate
- **An average Rhode Island capacity factor for DC nameplate is 14%**
- **The AC capacity factor is this rate divided by the derate (.14/.87) or 16.1%**

Example of Sizing Applied

6.9 kW DC panels / 6 kW AC inverter = 115% DC/AC ratio

6.9 kW DC * 8760 * 14% CF = 8,462 kWh/year

6.0 kW AC * 8760 * 16.1% CF = 8,462 kWh/year

A customer with 8,462 kWh 3-year average annual use could enroll in RE Growth with a 6.9 kW DC system, or in Net Metering with a 6.0 kW AC system (inverter size)

Capacity Notification Issue

- The Company reports Small Scale Solar class capacity in two locations, which was updated at least monthly on one and weekly on the other in 2017
- The Company will only report and update in one location weekly, and have links on other pages that refer to that one page
- Going forward, the Company will update Small Scale Solar class capacity at this page location:
 - https://www9.nationalgridus.com/narragansett/home/energyeff/4_interconnection-process.asp

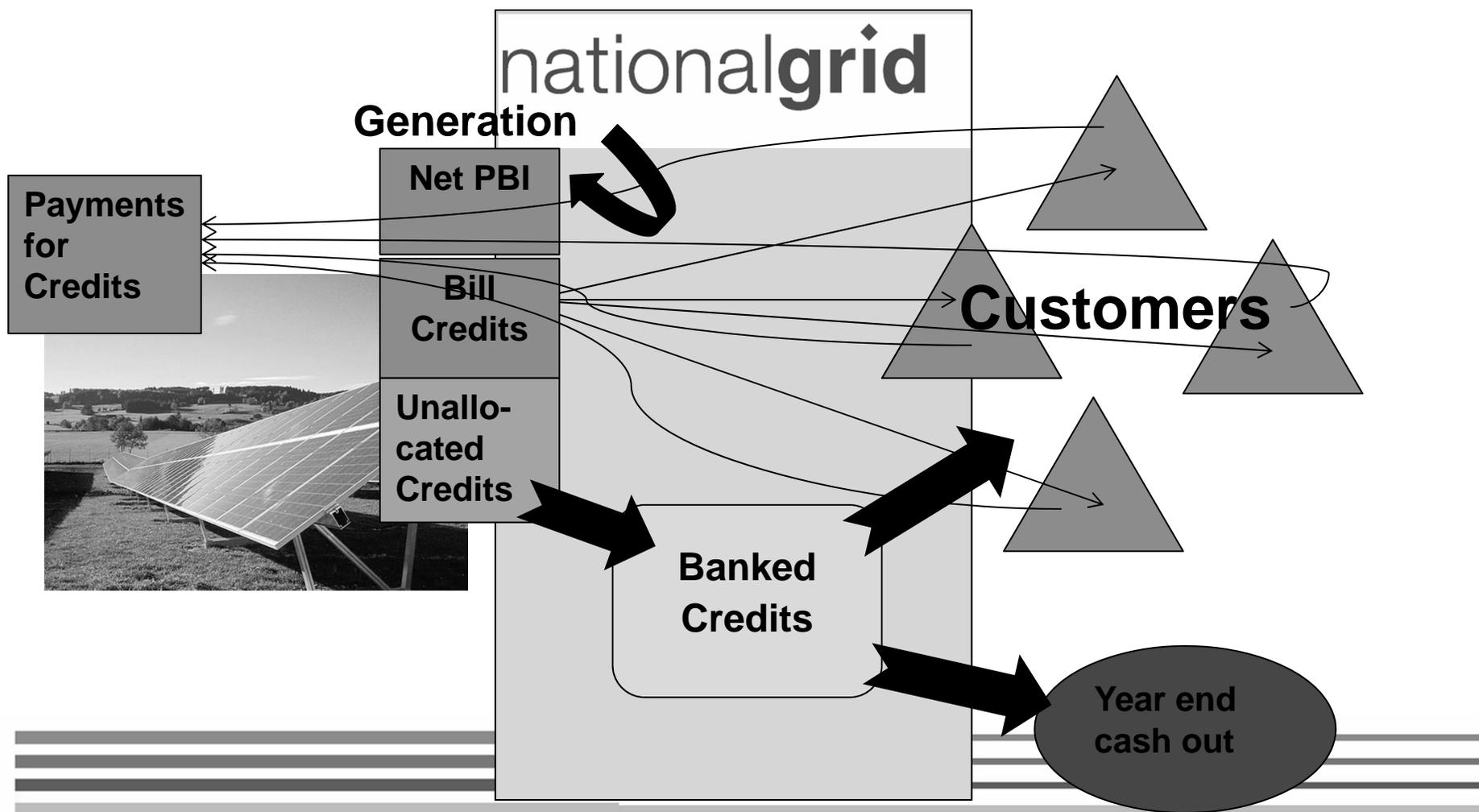
2017 Program Year Performance



- The distributed generation market responded to the continued offering of the RE Growth program with large amounts of new capacity and strong participation
- The Small Solar class of 6.55 MW was fully subscribed as of October 2017, suggesting ceiling prices should be lower or the class larger
- The third enrollment fully subscribed the capacity available for medium solar and all competitive classes, including all CRDG and one hydroelectric project
- The third enrollment was more than four times oversubscribed in total
- The weighted average accepted prices for 2017 open enrollments were 15 cents, 18.42 cents, and 17.79 cents per kWh, respectively

Community Remote Distributed Generation (CRDG) Flow Chart

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CRDG Billing and Credit Transfer Details



- On a monthly basis generated kWh will be allocated to Bill Credit Recipients up to the amount of available generated kWh
- Generated kWh available to allocate during a month is equal to the current month's generated kWh plus any generated kWh not allocated during prior months
 - Bill credits associated with unallocated kWh will accumulate in the generator's "banking" account at the default credit rate
- Available generated kWh will be cumulated and allocated to Bill Credit Recipients during the RE Growth program year

CRDG Billing and Credit Transfer Details



- If available generation exceeds the sum of the Recipients' on-site use, each Recipient will receive kWh allocation equal to on-site use, otherwise, Recipient will receive designated percentage share of generated kWh
- Bill Credit Recipients will receive monthly kWh allocations as long as the cumulative annual allocation is less than the Bill Credit Recipient's three (3) year annual average on-site use
- Payment for CRDG generation will always be a combination of bill credits for eligible Bill Credit Recipients or unallocated credits, and a cash payment to designated payment recipient

CRDG – Credit Value to Participants



- Monthly Bill Credit is equal to allocated generated kWh multiplied by Bill Credit Rate
- Bill Credit Rate - May be either a Fixed per kWh rate determined by the Applicant or the Default Bill Credit Rate.
- The Default Bill Credit Rate: the sum of the Standard Offer Service, Transmission, and Transition Charges, applicable to the Bill Credit Recipient's rate schedule
- Fixed Rate cannot exceed Default Service Rate at the time of the initial selection of the rate
- Unallocated credits are deducted at the default rate

CRDG – Cash Payment

- For generation in a month, the total PBI payment will be reduced by the sum of the Recipient's Bill Credits, and by the default rate for unallocated kWh
- The remaining PBI will be paid to the designated payment recipient
- At the end of each program year, any unallocated credits in generator banking accounts will be cashed out at the average wholesale energy price realized by the system over the course of the prior year or since operation, whichever is less
- Available credits are revalued at the default rate if they can be used by an enrollee, then deducted again at the applicable Bill Credit Rate upon transfer, which may result in additional cash payment if the latter is less than former

Minimum Bill Credit in CRDG

- The minimum bill credit would be the minimum amount that an applicant/owner can transfer to an enrolled customer per available kWh using the fixed rate option
- The minimum is proposed as 50% of the additional ceiling price recommended by the board for CRDG systems, vs. non-CRDG ceiling prices for same tech and size, with a maximum of 1.25 cents
- The premium is provided for enrollee financial benefits and administrative costs of managing CRDG systems
- Not billing for small credits reduces credit risk and administrative costs for CRDG applicants/owners

CRDG Bill Example (1)



	Generated kWh	PBI	PBI Payment	kWh Allocation	Bill Credit Rate	Bill Credit	Cash Payment
Project	3,200	25¢	\$800				
Recipient 1				1,000	10¢	\$100	\$90
Recipient 2				1,000	12¢	\$120	\$108
Recipient 3				1,000	1¢	\$10	\$0
Unallocated kWh				200	12¢	\$120	\$0*
Cash Payment from Nat. Grid							\$450
Totals				3,200		\$350	\$648

* Unallocated credits are banked at the default rate of 12 cents

CRDG Bill Example (2)



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				<i>Perf. Based Incentive</i>		\$0.20650					
3-year Average Use:		400,000				<i>Bill Credit Value</i>				\$0.14000	\$0.14000
	Available	Aggregate	Cumulative	Monthly	Cumulative			Total	Bill	Unallocated	Cash
Generation	Generation	Accounts	Use	Unallocated	Unallocated			PBI	Credit 1	Value	Payment
Apr	36,000	30,000	30,000	6,000	6,000			\$7,434	\$4,200	\$840	\$2,394
May	36,000	42,000	30,000	6,000	12,000			\$7,434	\$4,200	\$840	\$2,394
Jun	45,000	57,000	20,000	80,000	25,000	37,000		\$9,293	\$2,800	\$3,500	\$2,993
Jul	40,000	77,000	15,000	95,000	25,000	62,000		\$8,260	\$2,100	\$3,500	\$2,660
Aug	40,000	102,000	15,000	110,000	25,000	87,000		\$8,260	\$2,100	\$3,500	\$2,660
Sep	35,000	122,000	35,000	145,000	-	87,000		\$7,228	\$4,900	\$0	\$2,328
Oct	20,000	107,000	40,000	185,000	(20,000)	67,000		\$4,130	\$5,600	(\$2,800)	\$1,330
Nov	15,000	82,000	45,000	230,000	(30,000)	37,000		\$3,098	\$6,300	(\$4,200)	\$997
Dec	10,000	47,000	35,000	265,000	(25,000)	12,000		\$2,065	\$4,900	(\$3,500)	\$665
Jan	12,000	24,000	20,000	285,000	(8,000)	4,000		\$2,478	\$2,800	(\$1,120)	\$798
Feb	15,000	19,000	15,000	300,000	-	4,000		\$3,098	\$2,100	\$0	\$998
Mar	25,000	29,000	20,000	320,000	5,000	9,000		\$5,163	\$2,800	\$700	\$1,663
TOTAL								\$67,939	\$44,800	\$1,260	\$21,879

CRDG Bill Example (2) (continued)



Year-End Close-out of Unallocated Credits

Unallocated kWh	9,000 kWh
ISO-NE Average Monthly Clearing Price	\$0.0400 per kWh
Value of Unallocated kWh	\$360
Value of Banked Bill Credits	(\$ 1,260)
Value of Unallocated kWh – cash-out at YE	\$ 360
Net Reduction in Value	(\$ 900)