B3 Benchmarking

V8.4 New Features - Renewables

December 2019





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Agenda

Ol Onsite Owned

Onsite Exported

Onsite RECs Sold – e.g. PPA

O4 Community Solar Subscriptions

05 Renewable Utility Programs

06 Visualizations

Onsite Owned

Meter Editor				×				
				METER READING INFORMATION				
GENERAL CONNECTIONS SUBMETER OP				METER		Read Dates: 03/28/18 - 04/28	(18 (31 Days)	
				DESCRIPTION	CURRENT READING	PREVIOUS READING	USAGE	
Consumption Units	PV Generated	Include Columns	Ignore Gap Warnings	Total DG System Production	96651 Actual	94446 Actual	(1) 2205 kWh	
kWh (thousand Watt-hours) 🔻	Onsite 🔻	Renewables	Before:					
Using eGRID subregion MROW for CO2e factors.		Subscription Charge		METER READING INFORMATION				
esing comp subjection inner for core lactors.	REC Ownership			METER Multiplier x 40			Read Dates: 03/28/18 -	04/28/18 (31 Days)
	Owned v						MEASURED	BILLED
				DESCRIPTION	CURRENT READIN	G PREVIOUS READ	ING USAGE	USAGE
					6943 Actual	6783 Actua	al 160	6400 kWh
					2) 19 Actual	16 Actua	al 3	120 kWh
Meter Readings (Utility Bills)				Net Delivered by Xcel	157 Actual	Actua	al 157	6280 kWh
	al Charge			Net Generated by Customer	0 Actual	Actua	al O	0 kWh
Start Date End Date (kWh)	al Charge (\$) \$ Per Unit	Con	sumption	Reactive	1169 Actual	1164 Actua	al 5	200 kVArh
3/28/2018 4/28/2018 2,205.00	\$220.50 \$0.100			Demand	Actual			13.6 kW
and the second se				Billable Demand				16 kW
				Power Factor Demand	99.95%			

- This site did export some energy to the grid², but it pulled more than it exported³ and is sized small enough that overproduction won't occur, thus additional columns do not need to be included.
- It is important to designate if RECs are owned as that impacts the CO2e calculations for B3 and ESPM.
- The PV Used Onsite is the system production meter^①.
- Some organizations pay 3rd party solar vendors via a separate bill so a charge may be associated with onsite renewables. (Example of paying \$0.10/kWh)
- For the utility meter, the reading's consumption would be the net delivered/billed amount⁽⁴⁾. As with standard utility meters, the meter/premise total would be entered for the total charge.
- In this example, the building used a total of 8485 kWh.

ELECTRICITY CHARGES				
DESCRIPTION	USAGE	UNITS	RATE	CHARGE
Basic Service Chg				\$25.64
Basic Service Chg				\$6.40
Energy Charge	6280	kWh	\$0.034980	\$219.67
Energy Charge Winter	0	kWh	- \$0.065810	\$0.00
Energy Charge Winter	0	kWh	- \$0.067290	\$0.00
Fuel Cost Charge	6280	kWh	\$0.024484	\$153.76
Sales True Up	5672.26	kWh	\$0.001110	\$6.30
Demand Charge Winter	16	kW	\$10.710000	\$171.36
Affordability Chrg				\$3.56
Resource Adjustment				\$36.61
Total				\$623.30

NON-RECURRING CHARGES / CREDITS DETAILS

DESCRIPTION		CHARGE
Nuclear Fuel Settlement	Premise #	- \$4.17 CF
Total		- \$4.17 CF
Premises Total		\$619.13

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Onsite Exported

Aeter Editor									×				
GENERAL	CONNECTIONS	SUBMETER	OPTIONS						0	_			
Consumptior	n Units		PV G	enerated	Include Colu	mns	lgnor	METER READIN	IG INFORMAT	TION			
kWh (thousar	d Watt-hours)	•	Ons	site 🔻	Renewables	5	Before	METER				Read Da	ates: 03/2
Using eGRID su	bregion MROW	for CO2e factors.	REC	Ownership	Subscription	n Charge		DESCRIPTION			CURRENT READING	PRE	EVIOUS
				ned v				Total DG System	Production		177270 Actual		171869
								METER READIN	IG INFORMAT	TION			
								METER	Multiplie	rx 40			
Meter Readii	ngs (Utility	Bills)						DESCRIPTION			CURRENT READIN	G	PRE
Start Date	End Date	PV Used Onsite (kWh)	PV Exported Offsite	Total PV Production	Total Charge	\$ Per Unit		Total Delivered b	oy Xcel	2	2875 Actual		
			(kWh)	(kWh)	(\$)			Total Delivered b	y Customer		2607 Actual		
3/29/2019	4/29/2019	3,121.00	2,280.00	5,401.00	\$0.00	\$0.000		Net Delivered by	Xcel		0 Actual		
								Net Cenerated b	. Outstands	$\overline{\mathbf{a}}$	E7 Astual		

- This site did pull some energy from the grid ②, but it sent back more than it used 3 so need to include the Renewables columns.
- The PV used onsite is calculated by subtracting the net exported offsite 3 from total system production ①
- Some organizations own their renewables, thus the PV charge may be zero.
- For the utility meter, the reading's consumption would be zero. There are still utility charges for being connected to the grid and sometimes demand charges so the meter total (\$35.67) would be entered for the total charge.

METER		Read Dates: 03/29/18 - 04/29/	/19 (21 Dave)
DESCRIPTION	CURRENT READING	PREVIOUS READING	USAGE
Total DG System Production	177270 Actual	171869 Actual	(1) 5401 kWh
METER READING INFORMATION			

METER Multiplier x 40		F	Read Dates: 03/29/18 - 0	04/29/18 (31 Days)
			MEASURED	BILLED
DESCRIPTION	CURRENT READING	PREVIOUS READING	USAGE	USAGE
Total Delivered by Xcel	2875 Actual	2836 Actual	39	1560 kWh
Total Delivered by Customer	2607 Actual	2511 Actual	96	3840 kWh
Net Delivered by Xcel	0 Actual	Actual	0	0 kWh
Net Generated by Customer (3)	57 Actual	Actual	57	2280 kWh
Reactive	734 Actual	719 Actual	15	600 kVArh
Demand	Actual			13.2 kW
Billable Demand				13 kW
Power Factor Demand	93.33%			

ELECTRICITY CHARGES	RATE: Net Energy Billing Svc							
DESCRIPTION	USAGE UNITS	RATE	CHARGE					
Basic Service Chg			\$25.64					
Basic Service Chg			\$6.40					
Energy Charge	0 kWh	\$0.034980	\$0.00					
Energy Charge Winter	147.10 kWh	- \$0.065810	- \$9.68 CR					
Energy Charge Winter	2132.90 kWh	- \$0.067290	- \$143.52 CR					
Fuel Cost Charge	0 kWh	\$0.024790	\$0.00					
Sales True Up	0 kWh	\$0.001110	\$0.00					
Demand Charge Winter	13 kW	\$10.710000	\$139.23					
Affordability Chrg			\$3.56					
Resource Adjustment			\$14.04					
Total			\$35.67					

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Onsite RECs Sold – e.g. Power Purchase Agreement (PPA)

Meter Editor							×
GENERAL CONNECTIONS	SUBMETER	OPTIONS					0
Consumption Units kWh (thousand Watt-hours	5) 🔻	PV Gene Onsite REC Owr Sold	•	Include Columns Renewables Subscription Charge	Ignore Gap Warnings Before:		
Meter Readings (Utility Start Date End Date	Bills) PV Used Onsite (kWh)	Total Charge (\$)	\$ Per Unit	Con	sumption		
8/1/2019 8/5/2019	415.20	\$45.84	\$0.110			Ô	
8/5/2019 8/31/2019	1,649.00	\$186.50	\$0.113			Û	

- These are setup and entered very similar to standard electric meters with the reading periods, consumption and total charge pulled from the solar vendors bills.
- The additional renewable columns are no needed
- Ensure the REC Ownership is correctly assigned

 Often the onsite solar array is not large enough to service the building all of the time so a standard electric meter may be needed in B3 as well.

of each other.		Total System Size, kW			Total Contract Amount	
	Γ	15.121	¢₩			
Description		Qty	Rate)	Amount	
Solar Production Meter Reading:						
August 1 - 5, 2019		415.2 kWh		0.1104	\$45.84	
August 6 - 31, 2019		1,649 kWh		0.1131	\$186.50	

 The utility may not reference the renewable energy thus the two meters in B3 are independent of each other.

Community Solar Subscription

Meter Editor									METER READING	
Consumptio	CONNECTIONS in Units nd Watt-hours)	SUBMETER	OPTIONS PV Generate Offsite ▼ REC Owners Owned ▼	•	Include Columr		lgnore Gap Warnings Before:		METER DESCRIPTION Measured Readi Total Energy Interval Usage Total Energy Reactive Energy Firm Demand	Multiplier x
								ļ	Interrupt Demand	
Meter Readi	nge (Eltility	(Pille)							Demand Billable Demand	
Meter Read	ngs (otility	/ DIIIS)	DV()/amdam		_				Power Factor De	emand
Start Date	End Date	Consumption (kWh)	PV Vendor Charge (\$)	Subscription Credit (\$)	Total Charge (\$)		Consumption		ELECTRICITY	
3/1/2019	4/1/2019	10,755.87	\$1,075.89	\$1,346.10	-\$270.21	-\$0.025		Ô.	DESCRIPTION	
									Pagia Sanciaa (Cha

- This site has two subscriptions thus there would be two of the same meter setups.
- By designating the generation as offsite, the Subscription Charge columns are included.
- The subscriptions run calendar months thus will not align with reading periods. Depending on utility reading period, may see more than one month (or none) of subscription credits.
- The subscription consumption and credit are pulled from the utility bill. The PV Vendor Charge will come from the PV bill. (Example of paying \$0.10/kWh)
- For the utility meter, the reading's consumption^① would be entered like a standard utility meter and the Total^② would be entered (not the Premises Total since the credits are being accounted for in these solar meters).

METER Multiplier x 80			Read Dates: 03/2	7/19 - 04/29	5/19 (29 Days)
			MEASUR		BILLED
DESCRIPTION	CURRENT READING	PREVIOUS READING	USAGE		USAGE
Measured Readings					
Total Energy	17719 Actual	17409 Actual		310	24800 kWh
Reactive Energy	2897 Actual	2871 Actual		26	2080 kVAr
Interval Usage	01771 4	A 1	1		04774 1144
Total Energy Reactive Energy	24774 Actual 2055 Actual	Actual Actual		4774 2055	24774 kWh 2055 kVAr
Firm Demand	Actual	Actual		2000	2055 KVAN 35 kW
Interrupt Demand	Actual				69 kW
Demand	Actual				104 kW
Billable Demand					104 kW
Power Factor Demand	99.66%				
ELECTRICITY CHARGES	RATE: Peak	Controlled Service	Ð		
DESCRIPTION	USAGE UNITS	RATE	CHARGE		
Basic Service Chg			\$55.00		
Energy Charge	24774 kWh	\$0.035770	\$886.17		
Fuel Cost Charge	24774 kWh	\$0.025956	\$643.03		
Sales True Up	3417.10 kWh	\$0.001090	\$3.72		
Sales True Up	21356.90 kWh	\$0.001680	\$35.88		
Firm Demand Winter	35 kW	\$11.000000	\$385.00		
Controllable Demnd	69 kW	\$9.320000	\$643.08		
Affordability Chrg			\$3.60		
Resource Adjustment			\$195.57		
Total			\$2,851.05	2	
edetermined Demand Level 35 OTHER RECURRING CHARGES	DETAILS				
DESCRIPTION			CHARGE		
Solar*Rewards Community Solar					
Production Credit					
Solar Production Period		March 2019			
REC credit >250kW	10755.87 kWh x -0.125150		- \$1,346.10	CR	
REC credit >250kW	18867.63 kWh x -0.125150		- \$2,361.28		
Total			- \$3,707.38	CR	
Premises Total			- \$856.33	0.0	

Community Solar Subscription

Meter Editor			×
GENERAL CONNECTIONS SUBMETER OPTIONS			0
This is a submeter, redundant or subscribed to	End uses. Check all th	nat apply:	
Middle School, Utility Electric	Heating	Domestic Hot Water	
	Cooling	Process Loads	
Serves a data center?	Interior Lighting	Supplemental Heat	
	Interior Equipment	Exterior Lighting	
	Fans	Exterior Miscellaneous	
	Pumps	Task Lighting	-

 An additional step with Community Solar meters is to assign them as a submeter to the utility meter. This ensures the application accurately represents the amount of grid electricity that is being offset by the renewable subscription(s).

Renewable Utility Programs

- Many utilities have programs allowing buildings to allocate all or some of their energy come from renewable sources – e.g. solar, wind, a mix.
 - When 100% of that energy source is provided from renewables, only 1 renewable meter is needed in B3. If you don't see your utility in the renewable utility dropdown, please contact B3 Support and we will get it added.
 - When a portion of a energy source is provided from renewables, 2 meters will be needed in B3: 1 standard electric meter and 1 renewable meter. The allocation of the consumption between the two meters will need to be calculated if not detailed on the bill.
 - In both cases, the generation for the renewable meter would be 'Offsite'.
 For these programs, utilities may keep the RECs to count towards their goals so ensure that the RECs are correctly assigned depending on the utility program. Example of some of Xcel Energy's programs...

Program	REC Ownership
Windsource®	Subscriber
Renewable*Connect [®]	Subscriber
Solar*Rewards®	Xcel Energy
Solar*Rewards [®] Community	Xcel Energy

Visualizations

SUMMARY

Templates: Custom Report

Monthly Continuous

Annual

Monthly Year Over Year

Rolling 12 Month Avg

Chart Type

The various types of PV renewables are designated with varying shades of orange as well as noted in the legend.

Hide Customization Options

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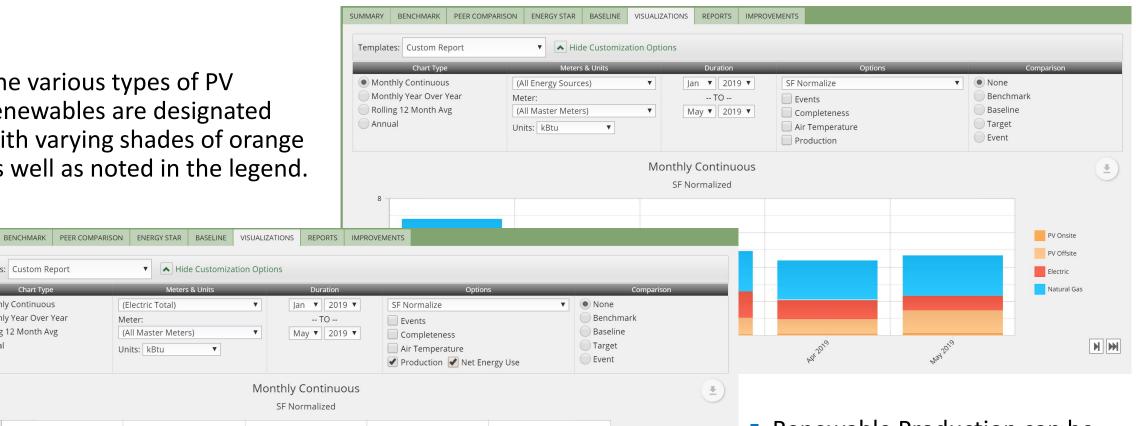
Meters & Units

(Electric Total)

(All Master Meters)

Meter:

Units: kBtu



- 3.0 2.5 PV Onsite 2.0 PV Offsite Electric 1.5 Ê Produced 1.0 Net Energy Use 0.5 0.0 an2019 ceb 2019 Nar 2019 212010 HH H H
 - Renewable Production can be viewed along side consumption.
 - When viewing "(Electric Total)", an additional option is added to display Net Energy Use

Questions?