B3 Benchmarking

V8.4 New Features - Renewables

December 2019

WILLDAN

Agenda

01   Onsite Owned

02   Onsite Exported

03   Onsite RECs Sold – e.g. PPA

04   Community Solar Subscriptions

05   Renewable Utility Programs

06   Visualizations

Onsite Owned

Meter Editor

Tabs: GENERAL | CONNECTIONS | SUBMETER | **OPTIONS**

Consumption Units
kWh (thousand Watt-hours) ▼

Using eGRID subregion MROW for CO2e factors.

PV Generated
Onsite ▼

REC Ownership
Owned ▼

Include Columns
☐ Renewables
☐ Subscription Charge

Ignore Gap Warnings
Before:

Meter Readings (Utility Bills)

Start Date	End Date	PV Used Onsite (kWh)	Total Charge ($)	$ Per Unit	Consumption
3/28/2018	4/28/2018	2,205.00	$220.50	$0.100	

METER READING INFORMATION

METER — Read Dates: 03/28/18 - 04/28/18 (31 Days)

DESCRIPTION	CURRENT READING	PREVIOUS READING	USAGE
Total DG System Production	96651 Actual	94446 Actual	① 2205 kWh

METER READING INFORMATION

METER Multiplier x 40 — Read Dates: 03/28/18 - 04/28/18 (31 Days)

DESCRIPTION	CURRENT READING	PREVIOUS READING	MEASURED USAGE	BILLED USAGE
Total Delivered by Xcel ③	6943 Actual	6783 Actual	160	6400 kWh
Total Delivered by Customer ②	19 Actual	16 Actual	3	120 kWh
Net Delivered by Xcel ④	157 Actual	Actual	157	6280 kWh
Net Generated by Customer	0 Actual	Actual	0	0 kWh
Reactive	1169 Actual	1164 Actual	5	200 kVArh
Demand	Actual			13.6 kW
Billable Demand				16 kW
Power Factor Demand	99.95%			

ELECTRICITY CHARGES — **RATE: Net Energy Billing Svc**

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 CR
Total		**- $4.17 CR**

Premises Total	**$619.13**

- 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 CO_2e calculations for B3 and ESPM.
- The PV Used Onsite is the system production meter①.
- 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 amount④. 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.

Onsite Exported

Meter Editor

GENERAL | CONNECTIONS | SUBMETER | **OPTIONS**

Consumption Units: kWh (thousand Watt-hours) ▼
Using eGRID subregion MROW for CO2e factors.

PV Generated: Onsite ▼
REC Ownership: Owned ▼

Include Columns: ☑ Renewables ☐ Subscription Charge

Meter Readings (Utility Bills)

Start Date	End Date	PV Used Onsite (kWh)	PV Exported Offsite (kWh)	Total PV Production (kWh)	Total Charge ($)	$ Per Unit
3/29/2019	4/29/2019	3,121.00	2,280.00	5,401.00	$0.00	$0.000

METER READING INFORMATION

METER — Read Dates: 03/29/18 - 04/29/18 (31 Days)

DESCRIPTION	CURRENT READING	PREVIOUS READING	USAGE
Total DG System Production	177270 Actual	171869 Actual	① 5401 kWh

METER READING INFORMATION

METER Multiplier x 40 — Read Dates: 03/29/18 - 04/29/18 (31 Days)

DESCRIPTION	CURRENT READING	PREVIOUS READING	MEASURED USAGE	BILLED USAGE
Total Delivered by Xcel ②	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**

- This site did pull some energy from the grid ②, but it sent back more than it used③ so need to include the Renewables columns.
- The PV used onsite is calculated by subtracting the net exported offsite③ from total system production①
- 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.

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

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

Total System Size, kW	Total Contract Amount
15.12 kW	

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

Community Solar Subscription

Meter Editor

Tabs: GENERAL | CONNECTIONS | SUBMETER | OPTIONS

Consumption Units: kWh (thousand Watt-hours) ▼
PV Generated: Offsite ▼
REC Ownership: Owned ▼
Include Columns: ☑ Subscription Charge
Ignore Gap Warnings — Before:

Meter Readings (Utility Bills)

Start Date	End Date	Consumption (kWh)	PV Vendor Charge ($)	Subscription Credit ($)	Total Charge ($)	$ Per Unit	Consumption
3/1/2019	4/1/2019	10,755.87	$1,075.89	$1,346.10	-$270.21	-$0.025	

- 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 consumption① would be entered like a standard utility meter and the Total② would be entered (not the Premises Total since the credits are being accounted for in these solar meters).

METER READING INFORMATION

METER Multiplier x 80 Read Dates: 03/27/19 - 04/25/19 (29 Days)

DESCRIPTION	CURRENT READING	PREVIOUS READING	MEASURED USAGE	BILLED USAGE
Measured Readings				
Total Energy	17719 Actual	17409 Actual	310	24800 kWh
Reactive Energy	2897 Actual	2871 Actual	26	2080 kVArh
Interval Usage				
Total Energy	24774 Actual	Actual	24774	24774 kWh ①
Reactive Energy	2055 Actual	Actual	2055	2055 kVArh
Firm Demand		Actual		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**

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

Predetermined 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 **CR**
Total		**- $3,707.38 CR**
Premises Total		**- $856.33 CR**

Community Solar Subscription

■ 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

- The various types of PV renewables are designated with varying shades of orange as well as noted in the legend.
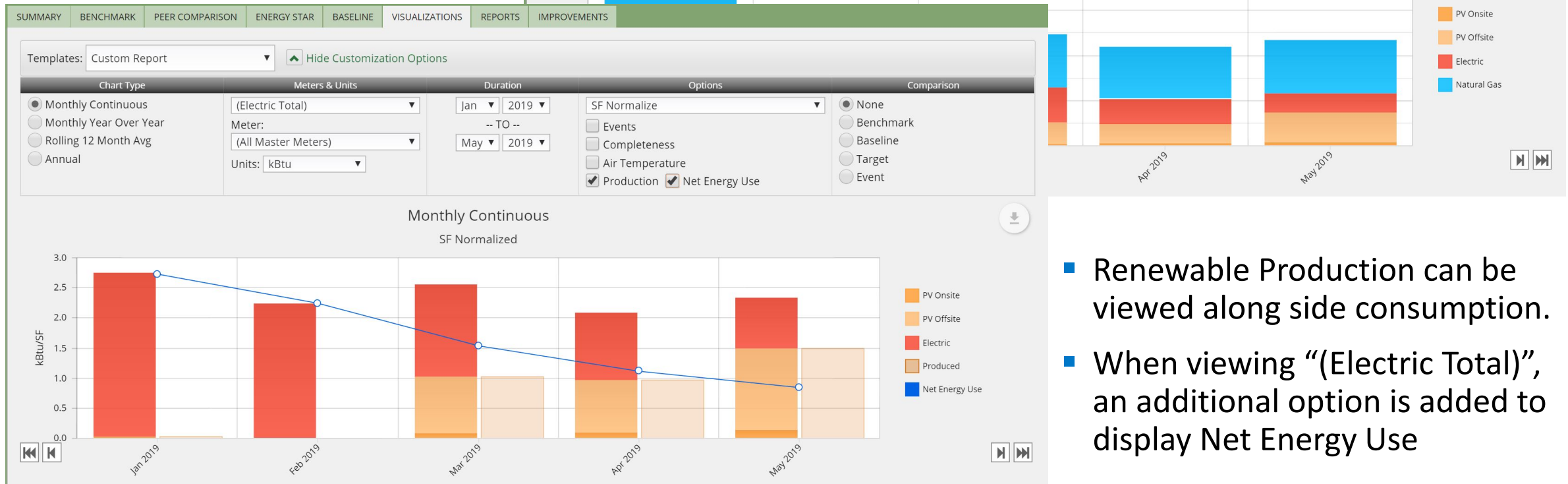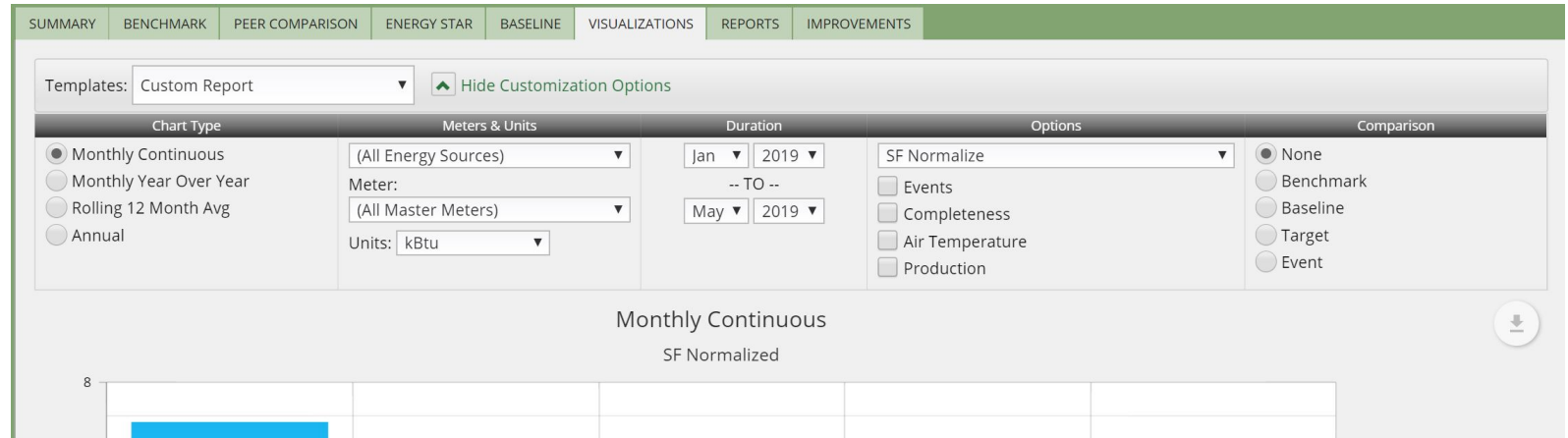
- Renewable Production can be viewed along side consumption.

- When viewing "(Electric Total)", an additional option is added to display Net Energy Use

Questions?