Enhanced Reporting From WEM-MX Meter for Building kWh Import, Export and Solar Energy Generation

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Summary:

Energy Tracking has been providing energy measurement of usage and solar generation data for over 10 years. What has recently been enhanced is the integration of critical logic within our WEM-MX meters for a **residential or commercial** single phase application to competitively provide:

- kWh import
- kWh export &
- kWh solar generation

Using a **single** meter, these 3 data points further enable computation of:

- Solar Usage = Solar Generation – export
- Building Usage = Solar Usage + import
- Net Import = import – export
- Net Export = export - import

The importance of these reported values enables crystal clear transparent energy management and billing to the end users in a micro grid environment all the way to a single standalone residential solar power plant.

An investor report can be generated on a single project or aggregated projects for locations either nationwide or worldwide. Revenue grade invoicing can easily be generated (see exhibit 1) for direct billing to 3rd party consumers.

Without the ability of the consumer to review in real-time and access historical reporting of the solar generation, grid import and grid export – They are unable to clearly manage or calculate their exact savings.

We at Energy Tracking have provided the tools to accomplish this by simply using one meter.

"In today's volatile micro inverter market, this comprehensive data will provide the competitive edge to developers to specify value added reporting and tools allowing more companies to successfully win projects." – Paul Reineck (Foothill Electric)

Solar Usage:

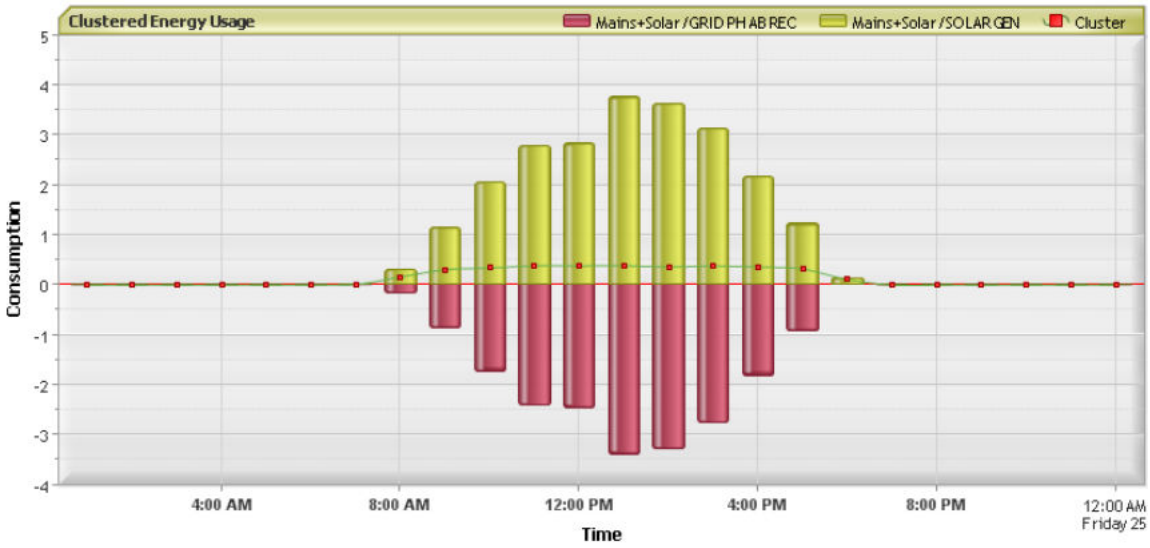

Figure 1:

Solar Usage = Solar Generation – export

Import, Export, Solar Generation & Building Usage:

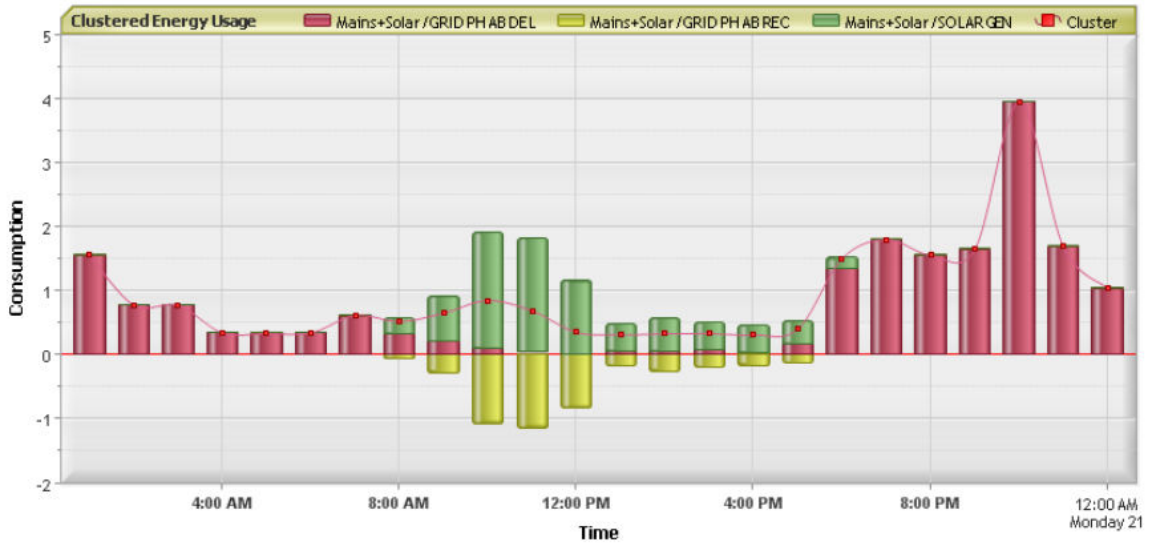

Figure 2:

Building Usage = Solar Generation – export + import

Figure 2 shows the three main measurement points provided by the WEM-MX meter which are import, export and solar generation. The "Cluster" series in the chart displays building usage.

Data Reported via Load Profile:

New Load Profile Data	**Old Load Profile Data**
kWh Delivered (import)	kWh Delivered (import)
kWh Received (export)	kWh Received (export)
Solar Generation	kVARh Delivered
Solar Usage = Solar Generation – export	kVARh Received

Value Proposition:

a. End users want to understand exact solar generation, energy import and export and correlate these numbers to their utility bill.

b. A single meter can provide import, export and solar generation greatly reducing the cost of hardware by not having to install two meters.

c. A single meter simplifies reporting of the data and reduces long term reporting costs.

d. A single meter reduces errors from a two meter reporting system. The back end does not need to cross reference another meter to compute additional figures.

e. Key data points can be used to further calculate:

   i. Net Import: (import – export)
   ii. Net Export: (export – import)
   iii. Building Usage: (Solar Generation + Net Import)

f. A long history of Energy Tracking providing highly accurate revenue grade meters that has gained trust – industry wide in providing high quality hardware, accurate measurement and consistent reporting.

g. Energy Tracking can provide customized firmware (if required) which is ready for plug-n-play. Specifically, we can preset the FTP account, password and directory details. Alternatively, we can also integrate the meter's automated reporting via web services (http). Note: The WEM-MX can report via FTP and Web Services allowing two separate locations to receive the same data.

Reference & Perspective:

There are two major changes going forward. The first is the "**reference**" and the second is the content in the load profile data as explained above.

What does this mean and why it most critical to understand?

Bi-directional meters provide import and export energy data.

But, what is the reference point? Is it from a utility's point of view or is it from a solar power plant generator's point of view?

OK – Let's look at it from a **Utility** perspective where:

- kWh Delivered is (exported) from the grid to the load.
- kWh Received is (imported) from the load to the grid.

Now, let's look at this from a **Solar Power Generation Plant** perspective:

- kWh Delivered (exported) from the load to the grid.
- kWh Received (imported) from the grid to the load.

As you can see from the above explanation, the measurement and reporting is based on the "**reference**".

The new firmware will be based on the "**reference**" from the **Utility** perspective.

If you have any questions, please call Energy Tracking @ 973-448-8660 or write to support@energytracking.com.

The WEM-MX meter is **proudly** manufactured in the **USA**.