

Net Metering, Aggregation, Energy Storage and Interconnection F.A.Q.s

Quick links:

- A. Net Metering
- B. Aggregation
- C. Energy Storage
- D. Interconnection

A. Net Metering

What is net (energy) metering?

Net (energy) metering (NEM) is a crediting process which allows Cooperative members who have installed qualified renewable energy generation systems (REGS) to receive credit for any electrical energy they export to the power grid. While NEM is a billing process, there is a generation interconnect process, discussed later, involved as well.

- **What renewable energy generation systems are qualified?**

Solar, wind, biomass, fuel cell, closed conduit hydro, or micro combined heat and power (CHP) up to 30 KW capacity. Biomass has a complicated definition but basically is non-hazardous renewable organic waste byproducts from agriculture, animal and forest industries or vegetation harvested specifically for biomass energy conversion. See Public Utilities Article, Maryland Code Annotated, §7-701

- **Who is eligible for net metering?**

Any Cooperative member who owns or operates, leases and operates or has contracted with a third party to own or operate a qualified renewable energy generation system which is located on the member's premises or contiguous property.

- **Are there any charges involved in participating in net metering?**

For participating in net metering itself, no. However, depending on the size and type of the REGS, there may be charges involved in installing or upgrading necessary equipment to facilitate the interconnect of the generation itself. The estimated cost for the equipment is determined as part of the generation interconnect process. See FAQ **“What is Choptank’s**

process for approving generation interconnects?” below.

- **Does Choptank install REGS or recommend anyone who does?**

No. Choptank does not install REGS, endorse, or recommend any installers, is partnered, or affiliated with any installers. REGS installation is between Choptank members and the third party installers through whom they choose to work with.

- **How does net metering affect my bill?**

Most bills will show two readings; KWH1 for the energy consumed, KWH2 for excess energy generated back into the power grid. Each month any energy shown in the KWH2 block will be subtracted from the energy shown in the KWH1 block, the difference being used to calculate the Distribution and Supplier energy charges for the month. If the energy shown in KWH2 (excess generation) block is greater than that shown in the KWH1 (consumption) block, you will be billed for zero energy (KWH) usage and the difference will be shown in a line below the bar graph box labeled “banked generation”. This “banked” energy will be carried over to the next month’s bill and netted against consumption in that month. If there is still excess energy remaining or generated in the follow on month, it again will be “banked” for another month and so forth until consumed or until the “April payout” occurs. Monthly payout of “banked generation” is also an option. See FAQ **“Can I be paid for my excess energy monthly”**.

- **What is the “April payout?”**

Any “banked” energy remaining on your bill in April will be cashed out and either credited to your bill in a dollar amount or forwarded to you by check. If you have another account with Choptank, you may request the dollar amount be transferred to that account to offset charges there.

- **What is the cash (purchase) value of the energy in the April payout?**

The value of the “banked” energy effectively purchased by the Cooperative in the April payout is the Generation rate of the Supplier Charge for the rate class under which the REGS is served.



- **Can I be paid for my excess energy monthly?**

Yes. Members of cooperatives with less than 250,000 members have the option to elect monthly payout of excess generation. The value of the energy is the Generation rate of the Supplier Charge for the rate class under which the REGS is served. This is in contrast to the "banked generation" energy carryover from month to month (until April) which has a value equal to the "retail" rate for the rate class under which the REGS is served. The banked generation presumably would offset energy consumption in subsequent months, therefore it would have "retail" value. If a member expects to have excess generation on an annual basis, then the value of the energy is the same whether paid monthly or during the April payout.

Therefore a member may wish to be paid monthly. Members requesting monthly payout usually have the dollar value credited directly to their bill to offset charges not affected by NEM.

- **Can I get to a point where I don't have to pay an electric bill?**

Possibly, but the economics to achieve this may not be favorable. NEM only affects the energy (KWH) components of an electric bill. Some rate classes have charges such as demand (KW) and reactive energy (**RKVAH**) that aren't affected by NEM. There are also the fixed monthly consumer charge, taxes and surcharges. A member can install a larger sized system than needed to offset expected annual energy needs (up to 200% baseline usage) and sell the excess energy to Choptank; however, the value of that energy is the Generation rate, not the retail value

- **Why can't I keep rolling my "banked generation" remaining in April over to follow on months?**

Maryland Law requires utilities to pay members for any excess generation remaining on

April's billing cycle.

- **What will the meter display?**

For most members the meter will display two numbers: Register 1 will display the energy consumed; Register 2 will display the excess energy generated back into the grid. For members' on demand or reactive energy rates the meter will display other numbers as well. The cooperative can help you determine what the numbers represent. For sample bills, please check out our website.

- **Will Register 2 (excess generation) on Choptank's meter match the renewable energy generator power output as indicated on its control?**

No. The control on the renewable energy generator indicates the energy output from the REGS. Choptank's meter registers only the excess generated energy delivered to the power grid. This excess energy is the net difference between what the REGS generated and what was consumed on site before being sent to the power grid.

- **How large of a REGS can I install?**

Maryland law limits the size to 2 MW (2000 KW). Additionally it can only be sized to generate up to 200% of the site's "baseline annual usage".

- **Will the size of the REGS affect what rate I'm on?**

Possibly. If you intend to generate a significant amount of your annual usage or in excess thereof, you may require a larger service to handle the generation capacity. Services greater than 50 KVA (200 amperes) are served by a general service small power rate (rate schedule S) which has a demand (KW) component in addition to an energy (KWh) component. This may be a less favorable rate than an energy only rate such as the standard residential rate.

- **What is baseline annual usage?**

The amount of energy consumed in the preceding 12 months before the REGS was installed. If there is not 12 months of usage history, the cooperative will estimate a baseline usage based on similarly sized accounts.

B. Aggregation

- **What is aggregated net metering (ANM)?**

Aggregated net metering allows excess energy from the REGS (host) meter to be applied virtually to other meters through the cooperative's billing system.

- **Who is eligible for ANM?**

Member accounts serving 1) agriculture, (see COMAR 27.02.05.07 Tax, property annotated code at MD. Par. 8-209 and Par. 9-105. 2) municipal government, or 3) non-profit organizations. The accounts need to be under the same name or entity and served by Choptank.

- **Do all the aggregated meters need to be on the same premises or contiguous property to be eligible?**

No, only the REGS (host) meter. However, meters/services that are close enough to be physically aggregated (usually within 800 feet of one another) will need to be physically aggregated, that is, combined together behind one meter for aggregation. Only meters that are too far apart to be physically aggregated will be virtually aggregated.

- **How is the excess energy applied from the host meter to other meters?**

Members participating in ANM will need to provide the cooperative with a list of meters to which the excess energy will be applied in sequential order (waterfall list), the host meter being the first. The list can only be changed once per year. There is no limit to the number of meters under one entity that can be aggregated.

- **What happens if there is still excess generation left after cascading through the waterfall list?**

The energy will become "banked generation" on the (first) host meter and be used to offset energy consumption in subsequent months to meters on the waterfall list. Any excess energy remaining on the host meter in April will be cashed out at the host meter's Generation rate.

- **I have an experimental time-of-use (TOU) meter, can I participate in NEM?**

Yes.

- **What are RECs or SRECs?**

The (Solar) Renewable Energy Credits or Certificate is a certification process by which a government entity certifies that a particular REGS generated a certain amount of energy. The RECs become a tradable commodity with market value similar to a stock certificate. Many states require utilities to obtain a certain percentage of energy from renewable sources. In lieu of building their own renewable generation, utilities may purchase RECs. Also, some individuals or organizations want to participate in renewable energy sources but can't do so directly for various reasons. By purchasing RECs these individuals or organizations can participate indirectly helping to finance REGS elsewhere. Possessors of RECS are considered

to have “title” to the renewable energy thereby able to claim such. Merely having renewable energy on one’s premise does not equate to “being green.”

- **Who certifies RECs in Maryland?**

The Maryland Public Service Commission (PSC). REGS applicants need to register their systems with the PSC which is done on-line through their website. Part of the application process will require a signed Certificate of Completion from Choptank. See "**What is Choptank's process for approving net metering?**" above. This is the only aspect of RECs in which Choptank is involved.

- **Does Choptank purchase RECs?**

Not at this time.

- **What law or regulations cover net energy metering?**

Net metering law can be found in the [Public Utilities Article, Maryland Code Annotated, §7-306](#). The regulations governing the law as overseen by the PSC can be found in the [Code of Maryland Regulations \(COMAR\) Title 20, subtitle 50, chapter 10](#). Generation interconnect regulations can be found in [COMAR Title 20, subtitle 50, chapter 09](#).

- **Who do I need to contact at the co-op?**

Call the Choptank Member Service Center, 1-877-892-0001 and tell the customer service representative you need a generation interconnect and they will transfer you to the appropriate co-op staff person.

C. Energy Storage

What is energy storage?

Energy storage devices (ESD), e.g. batteries, and associated controllers store energy in one form and convert it to distribution level service voltage for local or power supply use.

What is the benefit of energy storage?

There can be several benefits. Most notably energy storage is being used to store solar generation for times when there isn't as much or no generation. It is also being used as a backup power source during power outages. For members on demand rates, energy storage can be used to level out peaks in demand consumption thereby saving on demand charges. For members on time-of-use (TOU) rates, energy storage can be used to displace energy consumption during

higher cost energy periods. Larger sized systems may participate in power supply demand reduction, load shifting, or frequency response programs.

Does Choptank allow energy storage on its system?

Yes. But the process depends on how it will ultimately interact with the distribution system. Energy storage can behave like generation under some circumstances and load under others. If the ESD is prevented by some means from injecting power into Choptank's distribution system, then it can be treated as any other load connected to the system. If the ESD is connected such that it can inject power "generate" into the distribution system, then it will be treated as a generation interconnect.

What is the generation interconnect process?

See section D below.

Are there "ramp rate" restrictions associated with ESDs?

Yes. Depending on location, ramp rates are limited to a maximum of approximately 300-500 KVA/minute. Ramp rates are the rate at which the ESD may change power output between zero and nameplate rating.

D. Interconnect

Restricted Areas to additional generation.

Some areas of the distribution system have sufficient generation that additional generation cannot be supported without substantial system upgrades. The cost of the upgrades are such as to limit the economic feasibility of adding further generation.

- **What is Choptank's process for interconnecting generation?**

The member needs to file a generation interconnect request application with the cooperative. The application has a block to check indicating the intended use of the interconnect, e.g. net metering. There are four levels of application depending on the size, use and complexity of the generation. For most members a Level 1 or 2 application will be sufficient. Link to the applications can be found below, or they can be mailed or emailed upon request. Level 1 is for "lab certified" systems 10 KW and below. Level 2 applications are for "lab certified" systems larger than 10 KW. If multiple interconnects are served by a common distribution transformer, further level 1 applications may be elevated to level 2 applications. Level 3 applications are for systems that will be prevented from generating back into the grid.

Generation not meeting Levels 1, 2, or 3 criteria become Level 4 applications. Generally the generation vendor/installer will process the application for the member.

Assuming there are no problems with the interconnect application itself, the size or technical feasibility of the generation, the cooperative will give tentative approval to install the generation. For Levels 2-4 applications, there is an additional document to be signed called the Interconnect Agreement (IA). The IA lists additional operating requirements specific to the applicant's system. It provides system upgrade cost estimates and completion time estimates for those upgrades and is sent after the interconnect application has been determined to be complete.

Members may need to stay in contact with the Cooperative throughout the process to resolve issues that may arise.

Upon completion of the generating system, the member or vendor/installer on his behalf, will forward a signed Certificate of Completion (part of the interconnect application) and electrical inspection (managed by the county in which the generating system is being built and usually handled by the electrical contractor) for the installation to the cooperative. The cooperative may wish to conduct a witness test to verify the safety and protective controls are functioning properly before giving final approval to operate the generating system.

The cooperative will need to program the member's existing electric meter for reverse energy registration. The member should not operate the generating system other than short term testing until the meter is programed. Meters will register reverse (generated) energy as consumption. The Cooperative will not provide a refund or credit for unauthorized generation. It typically takes about a week for the net meter to be programed once the Certificate of Completion is received by Choptank.

- **Is there a limit as to how large a generator may be interconnected to the distribution circuit?**

Yes. Individual interconnects are restricted to no larger than 3 MVA on 12 KV circuits and 5 MVA on 25 KV circuits. Larger sized systems will require a dedicated circuit extension from the serving substation. Maximum interconnect capacity may be further reduced as a result of a load study performed in the application process. As a practical matter, the

distribution system is generally limited to something less than 4 MVA-mile of interconnect capability as measured from the serving substation.

- **Are there any special service equipment requirements for interconnect?**

Generally for lab certified (typically inverter based) systems under 25 KW, no. Some services or serving distribution transformers may need to be upgraded to a larger size to accommodate the expected capacity output of the generating system. This can be a relatively unexpected circumstance in initial planning where multiple members with interconnected generation are served by the same distribution transformer, e.g. in subdivisions.

Generation involving rotating machines will need appropriate disconnect relaying to detect phase and ground overcurrent, over/under frequency, reverse power, loss of phase and synchronization check.

Interconnects greater than 1500 KVA typically require relay driven overcurrent protection in order to coordinate with up line devices.

- **How long does the application process take?**

It varies depending on the size and complexity of the system. For Level 1 applications tentative approval is usually given within a few days. Final approval after the Certificate of Completion is returned is usually about a week. Level 2 - 4 applications can take several weeks at each end depending on the thoroughness of the application and any technical difficulties that arise. The larger and more complex the system the more likely technical issues will arise delaying the process.

- **What is the relevance of a queue assignment?**

This is the order in which interconnect applications are tentatively approved. In the event there is a system upgrade cost required to accommodate additional generation at a particular location, the applicant compelling the upgrade, usually the last member in the queue, is responsible for paying the cost for the upgrade.

- **How do I transfer my existing system to another account owner?**

For a Level 1 application, the new account owner will need to fill out a **Level 1 Interconnection Agreement Change Notice** and forward to Choptank Electric for signature. The new member will need to submit the fully signed change notice along with the Level 1 Renewable Energy Facility Certification filling to the Maryland Public Service Commission per instructions on the form.

For a Level 2-4 application, the existing Interconnection Customer will need to assign his existing Maryland Standard Agreement For Interconnection of Generator Facilities With A Capacity Greater Than 10 KW But Less Than Or Equal To 10 MW (“Interconnect Agreement”) to the new account owner per section 6.1 of the Agreement. The new account owner will need to agree to the assignment and the terms of the Agreement in writing. Lacking an assignment from the previous owner, the new owner will need to submit a new Maryland Level 2, Level 3, & Level 4 Interconnection Request Application.

- **What does "lab certified" mean?**

The generating equipment (typically DC to AC inverters for photovoltaic systems) has been certified by an independent testing laboratory to meet certain UL and IEEE standards. The specifications for generating equipment usually indicate the standards to which they have been built or comply. Lab certified equipment helps speed the application process. Choptank's primary concern is that the generation will immediately cease interconnect with Choptank's system during power outages or interruptions. The generating system cannot interfere with the delivery of power to other members or cause damage to the cooperative's system.

- **Is there an interconnect application fee?**

For Level 1 applications, no. For Level 2, it is \$50 + \$1/KW. For Levels 3 & 4, it is \$100 + \$2/KW.

- **Where do I send the application and fee?**

Applications and fees (if applicable) can be mailed to:

Choptank Electric Cooperative

Attn: Net Metering

P.O. Box 430

Denton, MD 21629

Or they may be emailed to netmetering@choptankelectric.coop.

- **Do I need to contact Choptank before filing an interconnect application?**

No, but it is recommended, particularly on systems above 50 KW. Technical implications

come into play the larger systems become which may change the economic feasibility of the project. Interconnect applicants will be required to pay for system upgrades needed for capacity or voltage regulation issues that arise as a consequence of the generation interconnect.

- **Will generation affect my voltage?**

Yes. Service voltage will rise and fall some as generation output increases or decreases. Generally it is unnoticeable. Wind and solar generation will be more variable due to the natural variability associated with wind and cloud cover.

- **Can I get high or low voltage?**

Yes for high, unlikely for low. The Coop generally regulates the primary voltage distribution system between 114 to 126 volts on a 120 volt base. During light load conditions the voltage is generally in the 124-126 range. During periods of light load and high generation, service voltage will increase.

- **What causes the voltage increase?**

In order for power to flow, there needs to be a voltage drop from the source to the load. The amount of voltage drop is dependent on the amount of power flowing and the resistance of the electric system, most notably the distribution transformer and service lateral. With dispersed generation, members' generation become a localized source of power and the Cooperative the load. Since the Cooperative's primary voltage system is regulated between 114-126 volts, the generator terminal voltage has to be higher than this. If the Cooperative's system is already operating in the 125-126 range, generation output can result in service voltage above this.

- **What can be done to correct voltage rise if it is an issue?**

There are a few options. Lowering power output during light load conditions would be one. Installing a buck-boost transformer at the main service panel is another. Alternatively the Cooperative could special order a distribution transformer equipped with taps that would perform the same function as the buck-boost transformer.

Net Metering Requirements



Interconnected generating equipment utilizing inverters must be compliant with IEEE 1547 and UL 1741. All interconnected generating equipment must automatically and immediately cease interconnection with Choptank upon and during power interruption or outage.

By signing the application, the member certifies that the installed generating equipment meets the preceding requirements and any other electrical/building code requirements by the Authority Having Jurisdiction. If installation of generating equipment requires electric service disconnect, an electrical inspection will be required prior to service being restored.