RENEWABLE NATURAL GAS AND "BOOK-AND-CLAIM" ACCOUNTING

Renewable Natural Gas (RNG) is made by capturing, and then purifying, methane released from decomposing organic wastes. RNG has a double emissions-reduction benefit:

- it prevents methane, a potent greenhouse gas (GHG), from escaping into the atmosphere and contributing to climate change;
- it can seamlessly displace conventional natural gas, which produces higher CO2 emissions, across a range of applications.

Because CO2 emissions associated with using RNG originate in the current carbon cycle, they are considered *carbon neutral*.

As of 2023, there are nearly 300 RNG projects now operational in the United States. As with other sources of renewable energy, facilities that are close enough to the end user for a direct connection are the exception, rather than the rule. Most RNG is transported from its point of production to its end user via existing natural gas infrastructure, using a procurement system called "book-and-claim"—the same kind of system that continues to drive the expansion of solar and wind-generated electricity.

About Environmental Attributes

Book-and-claim accounting for renewable and clean energy procurement involves the "un-bundling" and transfer of the energy's *environmental attributes*. This is most commonly achieved via contract and/or certificate.

"Environmental attributes" refers to the characteristics of an energy resource that determine the type and extent of its impact on the environment, and that may make it environmentally preferable to another form of energy. These characteristics may include that the fuel is renewable; the nature of the feedstocks from which it's made; that it is less polluting than conventional fuels; that it captures or avoids GHG emissions; or that it can displace other fuels that generate more CO2 when used.

When a clean or renewable fuel is produced, its attributes can be documented in a corresponding *certificate*. Such certificates allow buyers and sellers to transact, track and audit ownership of the specified environmental attributes; in a transaction, certificates and fuel are delivered together to the intended consumer. Certificates may take the form of regulatory credits or voluntary certfications. Examples include Renewable Energy Certificates (RECs) for wind or solar electricity under a state Renewable Portfolio Standard (RPS); Renewable Identification Numbers (RINs) for biofuels under the federal Renewable Fuel Standard (RFS); Carbon Credits for low-emissions fuels under California's transportation-focused Low Carbon Fuel Standard (LCFS); or Renewable Thermal Certificates (RTCs) for clean fuels under state "Clean Heat" programs.

Certificates for environmental attributes play a critical role in helping facilitate auditable transactions – helping consumers to reach fuels, and producers to reach markets, that might otherwise be unavailable because of geographic distance.

About Book & Claim

Energy procurement via book-and-claim systems, based on the transfer of certificates verifying environmental attributes, is the foundation of clean and renewable energy markets.

Most entities—utilities, campuses, buildings, fleets—receive their energy via large distribution systems, making it impossible to trace specific electrons or gas molecules from producer to buyer; this creates a barrier to direct clean energy procurement. Under book-and-claim, a contracted amount of clean energy (whether electricity or RNG) is introduced into a distribution system (booked) at one location, and an equal amount of energy is withdrawn (claimed) at another. The certificates verifying the energy's environmental attributes (RECs, RINs, Carbon Credits, RTCs) are transferred from the producer to the buyer, establishing a "chain of custody" and ownership of the energy *and* the associated emissions reductions.

Certificates and the energy commodity with which they are associated are "un-bundled" or "de-coupled" in a book and claim system, meaning that the certificates are tradeable and can be sold separately from the energy itself.

- The buyer can use the energy *and* the certificates, meaning they get to consume the energy and claim the associated environmental benefits.
- Alternatively, the buyer can use the energy but sell the certificates; this means they can no longer claim the environmental benefits, which pass to the party buying the certificates.
- The buyer can keep the certificates but sell the energy; they claim the environmental benefits, which the party buying the energy can't count towards environmental goals.

Book and claim does not guarantee that a buyer is receiving any solar-generated electrons or actual molecules of renewable natural gas. But it does allow potentially distant buyers to purchase the *certified environmental benefits* of clean/renewable energy that *has documentably been produced*. This gives producers access to much larger markets than they might otherwise have, making projects profitable, and enabling more projects to get built. Entities working to meet environmental targets are able to do so without a direct connection to a clean energy facility.

Book-and-claim has long been standard practice in the renewable/clean energy industries and continues to drive the growth of solar and wind electricity. The whole chain-of-custody process is subject to rigorous oversight to avoid fraud, double-counting and double-claiming.

One simple analogy is banking. The $20 bills you withdraw from an ATM in one city are almost certainly not the same bills you deposited in another city a few days before. However, they are still legal tender and still yours—and you are only going to be able to spend them once. A book and claim system similarly allows for the efficient banking and deployment of renewable energy.

Not all entities seeking to procure clean and renewable energy have direct or local access to such resources. A book-and-claim system enables geographically separated suppliers and end-users to connect; as a result, clean and renewable energy is being generated in ever-growing quantities, and is being consumed as part of the overall energy supply.