

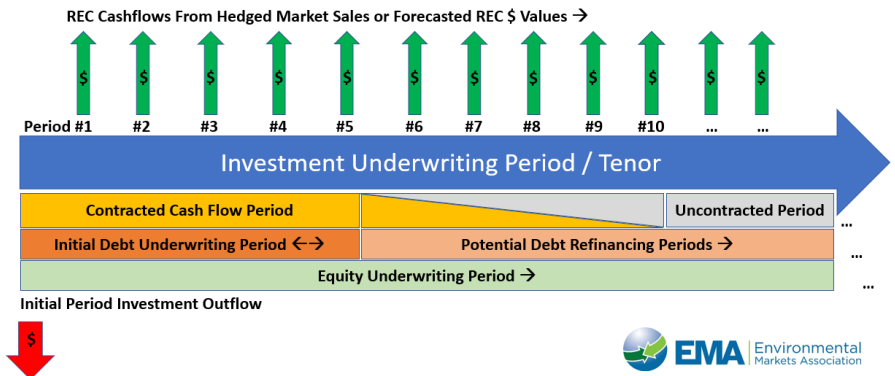
Primer: REC Financing Mechanics for Renewable Energy Projects

The Purpose of RECs: Renewable Energy Certificates (RECs) enable the development, financing, construction, and ongoing operation of renewable energy projects. RECs, which are an environmental instrument / environmental commodity, serve two significant purposes when it comes to financing renewable energy projects:

- RECs facilitate actual cashflow to projects alongside the other energy commodities that a project produces. RECs are saleable in either a compliance or voluntary market and generate revenue for a project asset. This revenue can be used to finance a new project or support ongoing maintenance expenses of existing projects to keep them viable overtime.

Investor confidence to underwrite REC revenues in project finance deals has taken over two decades to develop and relies on: (1) access to REC markets for existing projects, and (2) the expectation that REC markets will continue to exist in the future for renewable energy assets. REC-driven financing enables renewable energy project additionality and its positive environmental, economic and social impacts.

Sample Illustration of REC Financing Mechanics for Renewable Energy Projects



- RECs are synonymous with Energy Attribute Certificates (EACs) and provide a way to account for the creation, transfer, and retirement of the project's environmental attributes between producers and buyers. Generally, one REC represents the environmental attributes associated with 1 megawatt-hour (MWh) of renewable electricity generation. RECs are an essential accounting mechanism for renewable energy generation due to the physical nature of how power pools operate: once "green" electricity is delivered to the grid it becomes indistinguishably mixed with other "brown" electrons and therefore, no longer traceable. RECs solve this problem.

Renewable Energy Project Finance 101: Like any other asset, there are two categories of capital for raising finance for a project: equity and debt. Equity capital implies ownership, whereas debt capital does not. Within each of these categories, there are dozens of variations of specific equity and debt instruments that are used to deploy capital into projects. Although the exact types of capital products used to finance projects have considerations that are beyond the scope of this primer, the REC financing mechanics for raising equity and debt largely remain the same: RECs create project income / cashflow that provides a return on investment for equity investors or the repayment of principal and interest to debt lenders.

Renewable Energy Project Finance 201: RECs provide an additional commodity revenue stream for project investors to underwrite to as they consider whether to move forward with a project financing. When it comes to underwriting equity investments in renewable energy projects or lending money to a project, REC cashflows can either be contracted (i.e., already sold to another counterparty at the date of financing), uncontracted, or a mix of both over different tenors of time. Financial proformas for projects are broken into periods, which are aligned with the REC vintage, or the period in which a REC is created (e.g., from electricity generated between January 1st and December 31st). An annual proforma values RECs that will be sold in a particular year and aligns this with the investment mechanics of other revenue streams, such as from power, in the model. Equity investors ascribe different present values to contracted and uncontracted cashflows while debt lenders charge different interest rates. This impacts the revenue and risk profile of a project, which in turn impacts a project's cost of capital, and its ability to be financed or not.

RECs and Project Financing Implications for Practitioners: While project underwriting periods can be any length of time as determined by financing parties, a range of 25 to 50 years is not unreasonable for a long-dated infrastructure project investment. The existence of compliance and voluntary REC markets enables investors to value cashflows from the environmental attributes a project produces, and depending on market conditions in the project's jurisdiction, hedge (contract) these REC cashflows with other counterparties. The value of RECs will fluctuate depending on current market conditions and future expectations of market conditions by participants. In the United States, the current size of REC cashflows across compliance and voluntary markets is estimated to be between \$5 billion and \$10 billion annually. Depending on the REC market, REC revenues can provide anywhere from 10% to 100% of a project's revenues during the underwriting period. This REC revenue is incremental to power market sales and is critical to enabling project economics for the development of new renewable energy assets. Voluntary RECs represent an important underwriting assumption in voluntary REC-only deals and in compliance market financings, which may assume voluntary REC values in a downside scenario. Investor willingness to finance the value of RECs relies on this availability of RECs for existing and new projects (since new projects inevitably become existing projects).