# Technical Eligibility Reference Guide

## Title 17 Innovative Clean Energy

Loan Programs Office

### Summary of Title 17 Loan Guarantee Eligibility Criteria

- **Innovation:** LPO eligibility requirements stipulate that the Project must employ New or Significantly Improved Technology as compared to Commercial Technology in service in the United States, including projects that employ elements of commercial technologies in combination with New or Significantly Improved Technologies. This "innovation" must constitute one or more meaningful and important improvements in productivity or value and NOT be "Commercial Technology." Commercial Technology is defined as technology that has been installed in and is being used in three or more commercial projects in the United States in the same general application as in the proposed project.
- **Greenhouse Gas Emissions:** LPO eligibility requirements stipulate that the Project must avoid, reduce, utilize, or sequester anthropogenic emissions of greenhouse gases. LPO determines eligibility under this requirement for this solicitation by performing an independent greenhouse gas life cycle analysis to determine whether or not the project is an improvement over a "business-as-usual" case.
- **Reasonable Prospect of Repayment**
- **Located in the U.S.**

### Innovative Clean Energy Solicitation Summary

- An "Eligible Project" is from any of the categories listed in the solicitation, does not make use of technologies concerned or associated with fossil fuels or nuclear energy and:
  - Avoids, reduces, utilizes, or sequesters anthropogenic emissions of greenhouse gases or air pollutants.
  - Employs *New or Significantly Improved Technology* as compared to *Commercial Technology* in service in the United States (Innovative Technology).
  - Is located in the United States.
  - Provides a *reasonable prospect of repayment* of the principal and interest on the Guaranteed Obligation and other Project debt.

### Innovative Clean Energy Potential Project Types

- **Renewable Energy:** Electrification, geothermal, hydrokinetics, hydropower, onshore and offshore wind, solar, waste conversion
- **Hydrogen:** Hydrogen fuel cell technology for residential, industrial, or transportation
- **Carbon Capture:** Carbon capture, utilization, and sequestration practices and technologies including agricultural and forestry practices that store and sequester carbon and synthetic technologies to remove carbon from the air and oceans.
- **Efficient Electrical:** Efficient electrical generation, transmission, and distribution, including electric vehicle charging infrastructure.
- **Efficient End-Use:** Efficient energy technologies that may include distributed energy resources, demand response, energy efficiency, sensors and controls to improve operational efficiency,
- **Fuel-Efficient Vehicles:** Production facilities for the manufacture of fuel-efficient vehicles or parts of those vehicles, including electric drive vehicles and advanced diesel vehicles.
- **Pollution Control:** Projects that utilize pollutant control equipment to reduce air pollutants.
- **Energy Storage:** Storage technologies for residential, industrial, transportation, and power generation, including EV bidirectional storage, newer battery chemistries & flow batteries, compressed air energy storage, pumped storage hydropower, and thermal energy storage.

- **Industrial Applications:** Projects that use technologies or processes for reducing greenhouse gas emissions from industrial applications, including iron, steel, cement, and ammonia production, hydrogen production, and the generation of high-temperature heat.

*Note: These examples are not intended to be, and are not, exclusive or limiting. They are mentioned solely with the intent of identifying types of projects that could be eligible, subject to technical review.*

## Distributed Energy Projects

- A Distributed Energy Project may be eligible as a single project if the project is employing a single technology deployed pursuant to an integrated and comprehensive business plan such that the aggregation of installations and facilities at multiple locations constitute a single project.
- Among other types of facilities, distributed energy technology facilities may include, in appropriate cases, distributed energy resources, electric vehicle charging facilities, including associated hardware and software and/or fuel distribution facilities, including associated hardware and software, for alternative vehicle fuels, including hydrogen, liquefied natural gas (LNG), compressed natural gas (CNG), and biofuel, provided that such facilities otherwise satisfy all eligibility requirements.

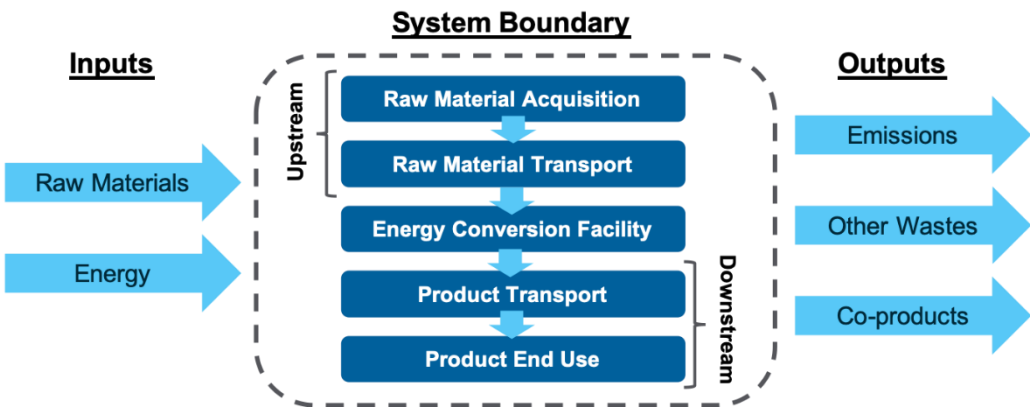
## Meeting the "Innovation" Eligibility Requirement

- LPO's Technical and Project Management Division (TPMD) reviews the applicant's case for meeting the innovation criteria in the Part 1 application.
- Through research, literature review, and consultation with private industry and/or DOE subject matter experts, TPMD evaluates the state of the relevant "Commercial Technology" to compare to the proposed project's technology.
- Using best engineering practices, determine whether the proposed project meets the eligibility requirements.
- Typically TPMD will need to ask clarifying questions of the applicant to determine whether the proposed project fits the definition of *New or Significantly Improved Technology* and therefore *Eligible Project.*

## Meeting the Eligibility Requirement for Greenhouse Gas (GHG) Emissions

1. TPMD performs a Greenhouse Gas Life Cycle Assessment (GHG LCA) to quantify the full environmental impact of a product or process relative to the business-as-usual baseline. The baseline for all projects is the business as usual (BAU) case to produce the equivalent function unit (product).

   Applicants must submit an Attachment C, Summary Lifecycle Greenhouse Gas Emissions Data Worksheet to provide TPMD with the project's energy and material inputs and outputs which TPMD will use to complete the GHG LCA of the proposed project. Pursuant to the life-cycle methodology life cycle analysis is completed on a cradle-to-gate or cradle-to-grave basis dependent on the extent to which the downstream uses can be verified.



2. Projects generating renewable electricity (such as, solar, wind, hydro) and/or electricity transmission projects that are not also producing co-products the business-as-usual baseline is typically determined using eGRID[1] on a national basis where the equivalent function unit is the electricity generated by the proposed project. For projects where the market is specifically targeting an isolated market (such as islands) a regional basis may be used for the proposed project's baseline as appropriate. The GHG avoidance is determined by evaluating the electricity generation that will offset the usage of the baseline grid emissions profile which includes a diverse fuel source mix (including, renewable, coal, natural gas, etc.).
3. For energy storage projects the LPO acknowledges the need for diverse storage technologies and systems to facilitate the penetration of renewable energy for electricity generation. Therefore, the LPO will evaluate storage projects qualitatively as appropriate to address the needs and demands of the market and grid within the region(s) the project is located.

## GHG Life Cycle Analysis (LCA) Approach

| ISO 14064 Activity | Applicant Guidance | TPMD Responsibilities |
|---|---|---|
| **Describe the Project** | ✓ Author according to ISO 14064 standard requirements | ✓ Validate that appropriate information has been provided |
| **Identify and Select GHG Sources, Sinks, And Reservoirs** | ✓ Provide relevant information and data on the project | ✓ Validate applicant-provided information and data<br>✓ Determine the appropriate GHG sources, sinks, and reservoirs for the baseline project |
| **Determine the Baseline Scenario** | ✓ Applicants may suggest an appropriate baseline scenario | ✓ Determine an appropriate business as usual baseline scenario based on the applicant's project |
| **Quantifying GHG Emissions** | Provide data on:<br>✓ Materials and energy used in the product life cycle<br>✓ Intended sequestration of GHG emissions during the product life cycle (if applicable) | ✓ Validate applicant-provided data<br>✓ Supplement applicant-provided data with additional data and/or reasonable assumptions, where necessary<br>✓ Request additional information from applicants, where necessary<br>✓ Calculate the GHG emissions associated with the applicant's project and compare this with the baseline |

[1] *U.S. Environmental Protection Agency Emissions & Generation Resource Integrated Database (eGRID)* https://www.epa.gov/egrid/data-explorer

## Definitions and Interpretation (10 CFR 609.2)

- ***New or Significantly Improved Technology*** means a technology, or defined suite of technologies, concerned with the production, consumption, or transportation of energy and that is not a Commercial Technology, and that has either:
  - Only recently been developed, discovered, or learned; or
  - Involves or constitutes one or more meaningful and important improvements in productivity or value, in comparison to Commercial Technologies in use in the United States at the time the Term Sheet is issued.
- ***Commercial Technology*** means a technology in general use in the commercial marketplace in the United States at the time the Term Sheet is issued by DOE
  - A technology is in general use if it has been installed in and is being used in three or more commercial projects in the United States in the same general application as in the proposed project; and
  - Has been in operation in such commercial project for a period of at least five years.
- Link: https://www.ecfr.gov/current/title-10/part-609

## Technical and Financial Evaluation of Applications (10 CFR609.7)

- **Applications will be denied if:**
  - The project is not ready to be employed commercially in the United States.
  - The project is for demonstration, research, or development.
- **DOE will consider the following factors:**
  - Does the technology have a potentially catalytic effect on the market?
  - Does the technology have the potential to be employed in other commercial projects?
  - Does the New or Significantly Improved Technology used in the project involve or constitute a meaningful improvement in productivity or value, as compared to Commercial Technology?
- "Innovative Technology" and "Greenhouse Gas Emissions" eligibility criteria are reiterated.
- This section also sets forth some criteria for determining whether the applicant has a "reasonable prospect of repayment".
- Link: https://www.ecfr.gov/current/title-10/part-609

## More Information

- **Innovative Clean Energy Solicitation Summary & Technology Areas Information:** https://www.energy.gov/lpo/innovative-clean-energy-loan-guarantees
- **Energy Policy Act of 2005, Section 1703, Title XVII:** https://www.govinfo.gov/content/pkg/BILLS-109hr6enr/pdf/BILLS-109hr6enr.pdf
- **Attachment C, Summary Lifecycle Greenhouse Gas Emissions Data Worksheet:** https://www.energy.gov/sites/prod/files/2015/02/f19/SUMMARY_GREENHOUSE_GAS_EMISSIONS_DATA_WORKSHEET_JANUARY_2015.xlsx



*General features as of May 2022, subject to change*