



# DOE Loan Programs Office

How the Government Delivers First  
Generation Commercial-scale Cellulosic  
Biofuels Projects in the U.S. Today

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U.S. DEPARTMENT OF  
**ENERGY**

**LOAN PROGRAMS OFFICE**

# Program Summary

## LPO administers three clean energy loan programs

### Title XVII Section 1703

- Provides loan guarantees to innovative clean technologies, where obtaining conventional private financing is difficult due to high technology risk and capital-intensive nature of investment
- Policy Objective: To deploy a wide array of innovative clean energy technologies at scale
- Credit Subsidy Cost: Some self-pay authority and limited credit subsidy for biomass projects.

### Title XVII Section 1705

- Provides loan guarantees to commercial-scale renewable energy projects, including those employing more mature technologies, that begin construction prior to September 30, 2011
- Policy Objective: To deploy renewable energy projects and create jobs in a tight credit market
- Credit Subsidy Cost: paid by DOE, through appropriated funds

### Advanced Technology Vehicle Manufacturing (ATVM) Loan Program (Section 136)

- Provides direct loans to manufacturers of advanced technology vehicles and related automotive components
- Credit Subsidy Cost: paid by DOE, through appropriated funds



# Bridging the Clean Energy “Valley of Death”

## LPO financing helps fill a well-documented gap in the market

	Research & Development	Demonstration/ Proof of Concept	Deployment/ Pilot Facility	Diffusion/ Commercialization	Commercial Maturity
	<b>“Valley of Death”</b>				
<b>Private Funding Source</b>	Angel / Series A venture capital	Series B venture capital	Series C & later	Limited VC or corporate equity for a few companies	<ul style="list-style-type: none"> <li>• Corporate investor / public markets</li> <li>• Project finance</li> </ul>
<b>Public / Non-Profit Funding Source</b>	<ul style="list-style-type: none"> <li>• DOE grants (e.g., Energy Frontier Research Centers)</li> <li>• State programs</li> <li>• University Funding</li> </ul>	<ul style="list-style-type: none"> <li>• DOE grants (e.g., Solar and wind program funding, ARPA-E)</li> <li>• State programs</li> <li>• University Funding</li> </ul>	<ul style="list-style-type: none"> <li>• DOE demonstration programs (e.g., smart grid demonstration, clean coal power initiative)</li> </ul>	<ul style="list-style-type: none"> <li>• <b>DOE Loan Programs</b></li> </ul>	<ul style="list-style-type: none"> <li>• Investment / Production Tax Credits</li> </ul>



# The Financing Gap LPO Fills

## Certain types of projects struggle to get built without loan guarantees

- **First-of-a-kind projects**
  - Traditional lenders have limited capacity/desire to underwrite innovative, first-of-a-kind energy technologies
  - Hard for commercial lenders to technically de-risk projects
  - DOE is uniquely positioned to do so
- **Projects seeking loans with long tenors**
  - Certain technologies (both innovative and more-mature) are not economically viable without long-term financing.
  - Few lenders are willing to make loans of this length – regardless of the promise of the underlying project
  - The U.S. government has the necessary long-term time horizon to make this type investment – at relatively little risk to taxpayers
- **Big-dollar bets**
  - Biorefineries and Biopower projects are extremely capital-intensive
  - Few traditional lenders have the capacity to make loans of the necessary size – particularly for projects with any degree of technological or completion risk.
    - To the extent they are willing to make such loans, the cost of capital is often prohibitive; club deals exacerbate the problem
  - The U.S. government has the financial resources – and the long-term time horizon – to provide the necessary capital



# Risks and Barriers to Finance First of a Kind Commercial-scale Biorefinery and Biopower Projects

- **Technology Risk**

- First-of-a-kind projects: DOE would like to see successful demonstration of technology in pilot/demonstration plant using the same feedstock, pre-treatment and enzyme/thermo-chemical process as proposed in the commercial-scale facility.

- **Skin-in-the-Game**

- Significant sponsor-contributed equity is needed from Project Sponsors
- Desired Leverage - 50:50 / 60:40

- **Liquidity and Debt Service Reserve Accounts**

- 18-24 month Debt Service Reserves
- Robust Market-Price Reserves needed in the absence of fixed-price off-take contracts
- Robust Working Capital Reserves needed to offset large working capital needs

- **Credit Enhancements**

- Completion Guarantees by Credit-worthy Project Sponsors
- LC's from creditworthy banks to back Completion Guarantees and equity commitments that are not committed or obligated at closing.

- **EPC Contract / Construction Risk**

- Financially Strong Contractor with ability to cover cost-overruns
- Contracts negotiated with delay and performance liquidated damages
- Design must be sufficiently developed to substantiate project costs within a reasonable margin for error.



# Risks and Barriers to Finance First of a Kind Commercial-scale Biorefinery and Biopower Projects Continued

- **Market Risk – Input and Output**

- **Feedstock and off-take risk must be addressed sufficiently by project sponsor**

- Medium to Long-Term Feedstock Contracts in place at time of application.
    - Financiers must understand commercial viability of feedstock supply
    - 100% Volume Commitment from established off-taker for Ethanol/Renewable Diesel Off-take
    - Negotiated PPA with credit-worthy off-taker for 100% of power.
    - Floor Price provided by Project Sponsor with means to back Floor Price.
    - Robust Market Reserve to handle commodity price swings during loan tenor.

- **Capitalization of Project Sponsors**

- DOE is looking for companies with established and successful operating histories in the biomass space and the financial wherewithal (net worth and liquidity) to manage project risks.
  - Successful track record of building and operating ethanol and bio-power plants.

- **Regulatory Risk**

- DOE is evaluating regulatory risk, including potential elimination of existing subsidies.
  - Those projects which are able to withstand removal of existing subsidies will fare better in the underwriting process than those projects which can not.



# Risks and Barriers to Finance First of a Kind Commercial-scale Biorefinery and Biopower Projects

- **Loan Tenor**
  - DOE is looking for loan tenors in the 10-12 year range. Shorter tenors are preferred.
  - Cash flow sweeps reduce anticipated term.
- **Operating Risk**
  - O&M provider is established and experienced with successful track record.
  - O&M operator should be financially incentivized to perform.
- **Financial Risk**
  - Inadequate Reserves
  - Low Debt Service Coverages



# Program Features

## LPO financing is a cost-effective use of government resources

- Self-Supporting
  - All Title XVII program costs, including personnel, are covered by fees paid by applicants
- Excellent Leveraging of Government Resources
  - LPO financing is additive, i.e., it enables sponsors to build projects that would not otherwise get built, and attracts equity that would not otherwise be invested
  - A relatively small amount of appropriated credit subsidy supports a large amount of new private sector investment (approximately 13x multiplier, to date)
  - When loans are repaid, the nation has benefitted from the investment – at no cost to taxpayers. Where credit subsidies are “self-paid,” the government can even turn a profit
- Promotes Economic Growth and Job Creation
  - Large, innovative clean energy projects create permanent operating and temporary construction jobs. Significant job multiplier effects as well
  - Projects lower delivered cost of renewable energy, incentivize build-out of the domestic supply chain, and upgrade and expand infrastructure needed to capitalize on future energy innovation



# What the Loan Programs are Not

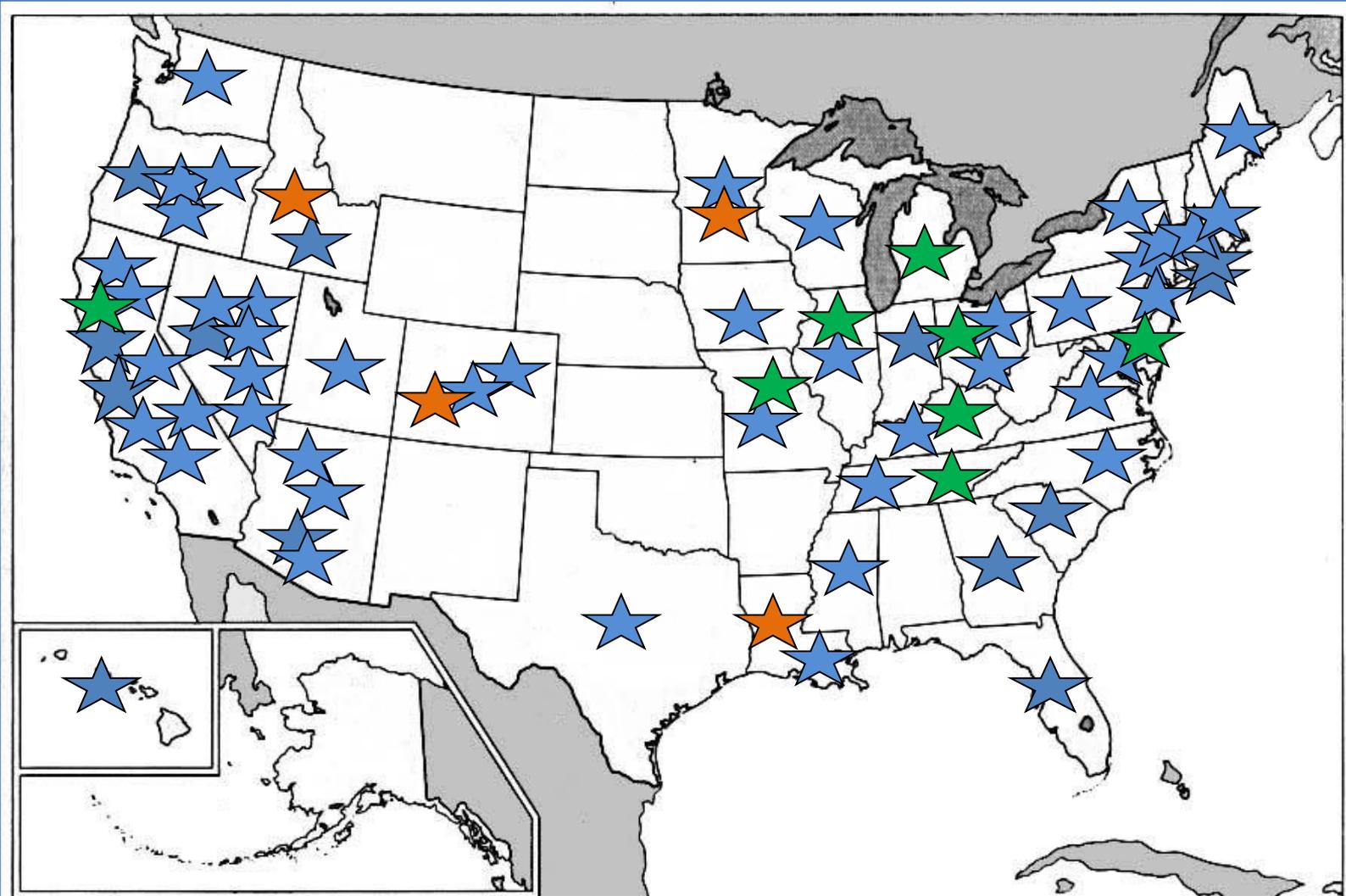
## LPO differs from other types clean energy programs

- Not a grant program
  - LPO provides loans and loan guarantees, which it expects to be repaid
- Not a rubber stamp
  - LPO accepts projects on a competitive basis. Not all eligible projects receive financing
  - Every project that receives financing goes through a rigorous and comprehensive financial and technical review process – similar to what a private sector lender would conduct – before a single dollar of taxpayer money is put at risk
- Not an operating cost to the government
  - While credit subsidy appropriations and loan authorities “score” for budgeting purposes, the costs associated with administering the Title XVII programs are paid by applicants



# Current Project Footprint

LPO has already supported projects in 38 states plus the District of Columbia



-  1705 Approved
-  1703 Approved
-  ATVM Approved



# How the Program Works:

Every project goes through a rigorous and comprehensive review – similar to what a private sector lender would conduct – before taxpayer funds are put at risk



## Activity

- ▶ Eligibility reviews
- ▶ Completeness reviews
- ▶ Preliminary financial and technical evaluation
- ▶ Preliminary NEPA screening
- ▶ Full financial and technical evaluation and scoring
- ▶ Market due diligence
- ▶ Technical due diligence
- ▶ Legal/Regulatory due diligence
- ▶ NEPA compliance
- ▶ Credit analysis and develop Credit Package
- ▶ Credit subsidy calculation
- ▶ Negotiation of Term Sheet
- ▶ Credit Committee (DOE)
- ▶ Credit Review Board (DOE)
- ▶ Interagency reviews (OMB, Treasury, NEC)
- ▶ Final legal documents
- ▶ Finalize credit subsidy
- ▶ Financial close
- ▶ Performance tracking

# Contact

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