



# Biomass 2014: Growing the Future Bioeconomy

July 29-30, 2014

Washington, DC

# Building Market Confidence and Understanding:

## Lessons Learned and Best Management Practices

9003: Biorefinery Assistance Program

# Figure 1- Framework For Execution USDA Project Management for Integrated Biorefinery Projects

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## Project Initiation

Pre-conceptual Design

Conceptual Design



## Definition

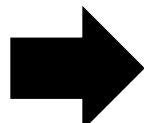
Preliminary Design

Application Process-Review

## Executive

Final Design

Construction



## Transition to Closeout

Start-up, Shakedown, Commissioning and Operations

# Project Initiation

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## **Pre-conceptual Design**

- USDA Develops NOFA

## **Conceptual Design**

- USDA Issues

# Definition

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## **Preliminary Design**

- Feasibility Study
- Technical Report
- Business Plan
- Environmental Report (NEPA)
- Standard Forms

## **Application Process**

- Eligibility Review
- Financial Review
- Technical Review
- Independent Review
- Executive Committee Review
- OMB Review
- Project Selection
- Conditional Commitment Letter

# Execution

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## Final Design

- Integrated Demonstration Complete
- Final Design Review
- Conditions Met
- Loan Closing

## Construction

- USDA uses:
  - Best Management Practices
  - Independent Engineer Review
  - Lender Concurrence



# Transition to Closeout

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Continue Best Project Management Practices with Independent Engineer

- Start-up
- Shakedown
- Commissioning
- Operations



# ***Biorefinery Assistance Program***

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**FIRST OF ITS KIND**





# 9003 Biorefinery Assistance Program

## Overview - Scope

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- Provides loan guarantees of up to \$250 million for the construction and retrofitting of commercial scale biorefineries that produce advanced biofuels



# Section 9003 Biorefinery Assistance Program Summary of 32 applications received, 2009 to 2012

Number	Technology	Feedstock	Advanced Biofuel
3	Anaerobic digestion	Animal manure, Municipal solid and food wastes	Natural gas/Electricity (2008 FB definition)
5	Thermo-chemical (F-T and similar processes)	Woody Biomass, Municipal solid waste	Green diesel, Green gasoline, Aviation Fuel, F-T waxes
6	Biochemical (Enzymatic and steam hydrolysis)	Woody Biomass, Energy grasses, Crop residues	Cellulosic ethanol
3	Thermo-chemical/ Bio-chemical hybrids	Woody Biomass, Municipal solid waste	Cellulosic ethanol
3	Lipid Hydro-cracking (UOP process)	Algae oil, non-food oilseeds (Camelina, high stearic canola), yellow grease, waste food oil	Hydro-treated Jet (HRJ), Hydro-treated Diesel HRD), Naphtha
5	Traditional (methyl ester) biodiesel	Soy oil, yellow grease, waste food oils, reclaimed corn oil (ethanol distillers syrup)	Biodiesel
7	Others	Various	Anhydrous ammonia

## FY 2014 Biorefinery Assistance Applications

NOFA closed January 30, 2014.

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- 8 applications received;
- \$510 million in loan guarantee authority requested;
- 4 States – Texas, Louisiana, Georgia, North Carolina;
- 5 Technologies:
  - 2 Green gasoline, diesel, and advanced aviation from woody biomass;
  - Cellulosic ethanol from algae;
  - 2 Anaerobic digesters using swine manure as principle feedstock;
  - Solid fuel pellets from woody biomass; and
  - 2 Biodiesel from waste greases and oils.

# Scope

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- Biological
- Bio Chemical
- Thermo Chemical
- Hybrids

# Planning

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- Pre planning
- Follow regulations & procedures
- Strict adherence to funding notice
- Observe guidelines

# Technical Report

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- Qualifications of Project Team
- Agreements & Permits
- Resource Assessment
- Design
- Engineering
- Schedule
- Procurement
- Installation
- Operations & Maintenance
- Decommissioning

# Risk Management

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- Credit evaluation
- Subsidy model

# Schedule Strategy

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- Review and Approve in 6 months
- Close in 1 year
- Construction and startup in 18 months



# Risk Mitigation

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- Scale, Construction, and Monitoring
- Research & Development (bench)
- Pilot (semi works)
- Integrated Demonstration (scaled)

# Regulatory

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- Follow the regulations & procedures
- Exceptions not recommended
- Modifications are time consuming and costly

# Programmatic

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- Field Offices (State)
- Regional (4)
- Headquarters (DC)

# NEPA

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- Start early
- Cat X, Class 1, Class 2, EA
- Choose advisors well
- Utilize State and Headquarter Staff

# Financial

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- Business Plan
- Equity requirement
- Conditional commitment

# Project Management

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- Experience and depth
- Technical
- Financial

# Project Team: Multidiscipline

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- Science
- Technology
- Engineering
- Finance
- Management

# Project Execution: Teamwork - USG, NREL, Lender, IE, Business

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- Weekly teleconference
- Quarterly meeting
- Annual review, comprehensive program review, and site inspection
- Pre-construction, construction, testing, commissioning, performance



# Technology Readiness

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- R&D results
- Pilot data, results, and reports
- Integrated Demonstration results and Independent Engineering reports.

# Technical

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- Feasibility Study
- Technical Report
- Business Plan
- R&D-Pilot-Integrated Demonstration  
Result Reports

# Validation

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- NREL and National Laboratories
- Partner Departments
- Independent Engineer Reports
- Internal USDA
- Consensus

# Go/no go decisions

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- Conditional Commitment
- Technical
- Financial

# Milestones

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- Conditional Commitment
- Project development schedule
- Loan note guarantee terms & conditions

# Review: Internal / External

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- Internal – RD, OCE, PSS, Budget
- External – Credit agency, NREL, OMB

# Funding Notice Development

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- Congress
- Departmental
- Public comment
- Independent consultations
- Clearance process
- Publication

# Merit Review Committee

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- State
- Regional
- National
- Independent
- Technical
- Executive
- OMB



# Selection

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- Staff recommendations
- Executive Committee Decision
- Staff processing

# Award Negotiation

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- Conditional Commitment
- Closing

# Active Project Management

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- Business
- Developer
- Lender
- Independent Engineers
- Department
- NREL

# Award Closeout

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- Conditional Commitment met
- Loan Note Guarantee term and conditions
- Commissioning
- Performance

# Sustainability

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- Social
- Economic
- Financial
- Environmental
- Technical

# Training

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- Return on Investment
- Safety
- Operations
- Management
- Operations
- Maintenance



## Section 9003 – Biorefinery Assistance Program 2014 Farm Bill Changes

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“Of the total amount of funds made available for fiscal years 2014 and 2015 under subparagraph (A), the Secretary may use for the cost of loan guarantees under this section not more than 15 percent of such funds to promote biobased product manufacturing.”

Mandatory Funding (available until expended):

- FY 2014 - \$100 Million
- FY 2015 - \$50 Million
- FY 2016 - \$50 Million

# Partnerships

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- R&D -- Pilot— Integrated Demonstration—First Commercial—Commercial Replication
- Private--Public
- Inter Agency
- Inter Departmental  
(DOE, USDA, DOD, DOT, DOC, DOS, & EPA)
- NREL and National Laboratories
- Academia
- Domestic—International





## Section 9003 – Biorefinery Assistance Program 2014 Farm Bill Changes

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- Name – “Section 9003 – Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program”
- Purpose -- Assist in the development of new and emerging technologies for the development of:
  - Advanced Biofuels
  - Renewable Chemicals
  - Biobased product manufacturing



# Thank you

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