

## CHAPTER ONE

# Introduction

Biomass energy, or bioenergy—fuel or power derived from organic matter—is one of the keys to a sustainable energy future in the United States and throughout the world. Bioenergy has the potential to:

- Improve energy security and stability by reducing dependence on fossil sources of energy.
- Increase economic development and job growth through creation of new domestic industries.
- Produce environmental benefits, including reduction of greenhouse gas (GHG) emissions.

Along with the potential opportunities, however, are challenges—among them the need for reliable feedstock supplies, the problem of infrastructure constraints, and the potential for environmental and land use impacts resulting from increasing biomass supplies to produce bioenergy.

In 2006, and for the sixth year in a row, biomass was the leading source of renewable energy in the United States, providing more than 3 quadrillion British thermal units (Btu) of energy. Biomass was the source for 49 percent of all renewable energy, or nearly 3.5 percent of the total energy produced in the United States (EIA, 2008).

### DOCUMENT MAP

- **CHAPTER ONE**  
Introduction
- **CHAPTER TWO**  
What Is Bioenergy?
- **CHAPTER THREE**  
Benefits and Challenges
- **CHAPTER FOUR**  
Identifying Bioenergy Opportunities
- **CHAPTER FIVE**  
Options for Advancing Bioenergy

### CHAPTER ONE CONTENTS

- 1.1 How the Primer Is Organized
- 1.2 References

## DOES THE MARKET FOR BIOENERGY LOOK PROMISING IN MY STATE?

The questions below can help state officials evaluate the potential for a bioenergy market in their state.

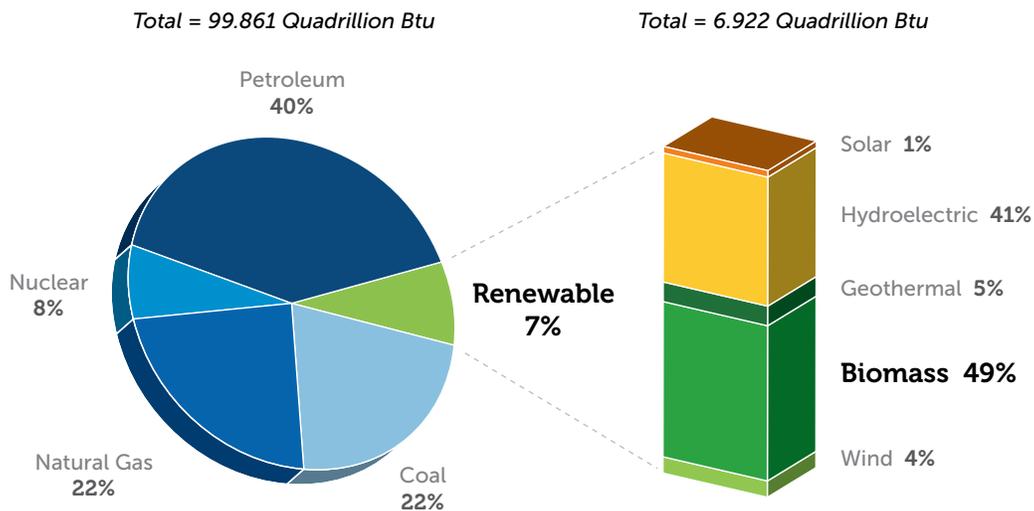
1. Does the state have sufficient biomass resources to support bioenergy development?
2. Are energy (electricity, propane, fuel oil, natural gas, or liquid fuel) costs in the state relatively high?
3. Is the cost of energy (e.g., electricity, gasoline, natural gas, oil) projected to increase?
4. Are electricity demand, renewable electricity demand, and/or biofuels demand projected to increase?
5. Are policy makers in the state inclined to hedge against potential future volatility?
6. Does the state have an electrical or thermal renewable portfolio standard that requires use of renewable energy?
7. Does the state have a renewable fuel standard that requires use of biofuels?
8. Are financial incentives for production of bioenergy (e.g., production incentives, tax incentives, low-interest loans, rebates, environmental revenue streams) offered in the state?
9. Does the state have standardized, simplified utility interconnection requirements for smaller bioenergy producers?

If a state has answered yes to two or more of the questions above, the market for bioenergy could be promising. Chapters 3 and 5 of this primer may be of most interest.

If a state does not yet have the answers to these questions, the resources in this primer should be helpful for determining what approaches can be taken to answer them.

**FIGURE 1-1. THE ROLE OF RENEWABLE ENERGY CONSUMPTION IN THE NATION'S ENERGY SUPPLY, 2006**

Source: EIA, 2008



The U.S. Department of Energy (DOE) estimates that the land resources of the United States could produce enough biomass to replace 30 percent of the current U.S. demand for petroleum on a sustainable basis by the mid-21<sup>st</sup> century (U.S. DOE, 2005).

Ultimately, the outlook for bioenergy depends heavily on policy choices made at the state and federal levels. The federal government and many states are exploring the role of biomass as a means to achieve economic, energy, and environmental goals.

EPA has produced this State Bioenergy Primer with the following objectives:

- To provide a basic overview of bioenergy, including what it is, its potential benefits, and its potential challenges.
- To describe the steps that state decision makers can take to assess whether and how to promote bioenergy.
- To identify opportunities for state actions to support bioenergy.
- To present resources for additional information.
- To provide examples and lessons learned from state experiences with bioenergy.

## 1.1 HOW THE PRIMER IS ORGANIZED

In addition to providing basic information and overviews of relevant issues, each chapter includes an extensive list of resources for additional, detailed information. These resources are also compiled into a stand-alone resource kit found in Appendix A.

## 1.2 REFERENCES

- **EIA (Energy Information Administration)**, 2008. *Renewable Energy Annual 2006.*, Washington, DC, 2008.
- **U.S. DOE (Department of Energy)**, 2005. *Biomass as Feedstock for a Bioenergy and Bioproducts Industry: The Technical Feasibility of a Billion-Ton Annual Supply.* DOE/DO-102995-2135. Washington, DC, April 2005. [http://feedstockreview.ornl.gov/pdf/billion\\_ton\\_vision.pdf](http://feedstockreview.ornl.gov/pdf/billion_ton_vision.pdf).

## HOW THE STATE BIOENERGY PRIMER IS ORGANIZED

### CHAPTER TWO: What Is Bioenergy?

Describes biomass feedstocks and conversion technologies for producing bioenergy

### CHAPTER THREE: Benefits and Challenges

Discusses energy security, economic benefits and challenges, and environmental issues

### CHAPTER FOUR: Identifying Bioenergy Opportunities

Presents steps for identifying biomass resource availability, assessing market potential, and evaluating existing policies and opportunities for action

### CHAPTER FIVE: Options for Advancing Bioenergy

Describes how states can facilitate projects through policies and regulations, incentives, direct investment, research and development, and information sharing

### APPENDIX A: Tools and Resources for States

Lists all resources referenced throughout the document

### APPENDIX B: Glossary of Bioenergy Terms

Provides an at-a-glance guide to key terms

