



# **Iowa Plan for Energy Independence**

**Charting Iowa's Course in the New Energy Economy**

**December 2007**

Submitted by the Iowa Office of Energy Independence



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CHESTER J. CULVER  
GOVERNOR

## OFFICE OF THE GOVERNOR

PATTY JUDGE  
LT. GOVERNOR

December 14, 2007

Fellow Iowans:

It is our goal to make Iowa the national leader in energy efficiency, and sustainable energy. We want to make Iowa what we have called the Silicon Valley of the Midwest with respect to our new energy economy. Since taking office in January 2007, we have made great strides toward this goal.

We have announced plans for the nation's first cellulosic bio-refinery, which will be able to extract ethanol from the whole corn plant, not just the kernel.

We have made renewable fuels more accessible to Iowans by opening more E85 pumps across the state, converting the state fleet to all flex-fuel vehicles, and opening distribution lines for bio-diesel.

And we have built upon our leadership in wind energy throughout the state, by recruiting and attracting new turbine manufacturers, and wind energy producers to Iowa. In doing so, we have taken steps to create and support thousands of "green collar" jobs right here in Iowa.

Now, we are undertaking another ambitious yet attainable goal – one of energy independence by the year 2025. Today, we are proud to unveil the steps we will take, with the *Iowa Plan for Energy Independence*.

Energy independence is essential for Iowa's environment and our economy. Our rich tradition of innovation has shown us that Iowa truly is a state of unlimited opportunity – now, more than ever. With the creation of the Office of Energy Independence and the Iowa Power Fund, we have committed our state government to dedicated leadership in this effort, and to making Iowa the renewable energy capital of the country.

We challenge every Iowan to be a part of the "21st Century Renewable Energy Expedition." Together, we will create a future of energy independence for all Iowans.

Sincerely,

A handwritten signature in dark ink, appearing to read "Chester Culver".

Chester J. Culver  
Governor

A handwritten signature in dark ink, appearing to read "Patty Judge".

Patty Judge  
Lieutenant Governor





## OFFICE OF ENERGY INDEPENDENCE

CHESTER J. CULVER GOVERNOR  
PATTY JUDGE LT. GOVERNOR

ROYA STANLEY  
DIRECTOR

December 14, 2007

Dear Fellow Iowans:

The State of Iowa has a long and proud tradition in agriculture and manufacturing. These industries have come together in the last two decades to distinguish Iowa as a leader in renewable energy and energy efficiency. In more recent years, Iowans have been at the forefront of creating new energy industries, of performing cutting edge energy research, and key educational programs.

In May 2007, Governor Culver, Lieutenant Governor Judge, and the State Legislature created the Office of Energy Independence and the Iowa Power Fund to build upon the successes of the state. The Office and the Fund were created to help coordinate Iowa's effort for expanding renewable energy production and energy efficiency. Paired together, the Office and the Fund are extremely powerful tools for leveraging a vibrant energy economy in Iowa that thrives on new industry, research and education.

The Office of Energy Independence is tasked with marking the path to lead Iowa into a new era of energy independence by 2025. The goal is bold, and it is achievable. In Iowa, where the state's natural resources and its industrious people have always been essential to our successes, we once again call upon these core elements to develop new energy supplies while conserving energy.

Preserving our links to the land and natural resources will be fundamentally important in this new era. We need to conserve our water, air, and soil while developing our energy resources for the future. Today, we move forward and expand upon our opportunity to lead the nation in renewable energy development, energy efficiency practices, and in achieving energy independence in the 21st Century.

Sincerely,

Roya Stanley  
Director  
Office of Energy Independence

## Letter from the Chair of the Power Fund Board

December 14, 2007

Fellow Iowans:

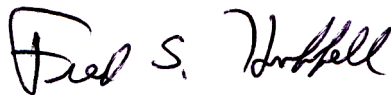
I am honored to write to you as the Chairman of the Iowa Power Fund. The Power Fund is a \$100 million investment in Iowa. The largest of its kind anywhere, the Fund was designed to promote commercialization, research, and education related to renewable energy and energy efficiency.

The Power Fund Board is comprised of eighteen Iowans from various industries, educational institutions, and state government agencies. Members of the Board represent a wide spectrum of expertise in a number of critical energy fields. Two of the Board members also serve on the Due Diligence Committee which serves as the backbone in making sure that all investments of the Power Fund are cutting-edge, yet practical in implementation.

Since our first meeting on September 26, 2007 the Board has met six times. In those meetings members established committees, developed rules and applications, as well as approved this plan.

This plan is a culmination of efforts from the Iowa Office of Energy Independence, various State Agencies, the Power Fund Board, and, most importantly, from Iowans across the state.

Sincerely,



Fred S. Hubbell

### Iowa Power Fund Board

Fred Hubbell, Board Chair

Glenn Cannon, Waverly Light & Power

Peter Hemken, DuPont Company

Patricia Higby, University of Northern Iowa Center for Energy & Environmental Education

Carrie La Seur, Plains Justice

Richard Leopold, Iowa Department of Natural Resources

John Norris, Iowa Utilities Board

Bill Northey, Iowa Department of Agriculture & Land Stewardship

Lucy Norton, Iowa Renewable Fuels Association

Michael Tramontina, Iowa Department of Economic Development

Thomas Wind, Wind Utility Consulting

### Ex-Officio Members

MJ Dolan, IA Association of Community Colleges Trustees

Gregory Geoffroy, Iowa State University

Kent Henning, Grand View College

Senator Hubert Houser

Representative Nathan Reichert

Representative Chuck Soderberg

Senator Roger Stewart

### Due Diligence Committee

Roya Stanley, Chair, Iowa Office of Energy Independence

Floyd Barwig, Iowa Energy Center

Franklin Codel, Wells Fargo Home Mortgage

Ted Crosbie, Monsanto

Vern Gebhart, Alliant Energy

Patricia Higby, Power Fund Board of Directors

Fred Hubbell, Power Fund Board of Directors

W. Curt Hunter, The University of Iowa

## **Acknowledgements**

The Office of Energy Independence (OEI) developed a plan for Iowa's energy future that reflects and incorporates the values and goals of Iowans. To complete such an effort for Iowa's energy independence, it was necessary to engage stakeholders in identifying our strengths and setting long-term goals. Many individuals and organizations invested time and energy and contributed their opinions and expertise throughout the process in developing the contents of this plan.

The Office of Energy Independence recognizes and thanks the following for their support and assistance:

- The more than 200 individuals who provided input into the development of the plan by attending a forum or submitting comments to OEI;
- The organizations that provided facility space and hosted the OEI public input forums: the Iowa Historical Building, the Coralville Community Center, Iowa Western Community College, and Iowa Central Community College;
- The Power Fund Board members, who provided informative feedback and reviewed and approved the plan; and,
- The State Energy Council, in particular the Department of Natural Resources, the Department of Economic Development, and the Iowa Utilities Board, which provided direction and guidance through the development of the plan.

*This Plan was developed and produced with the support of State Public Policy Group, Inc.*



### Executive Summary

Iowa's first annual Energy Independence Plan kicks off a new era of state leadership in energy transformation. Supported by Governor Chet Culver, Lieutenant Governor Patty Judge, and the General Assembly, the Office of Energy Independence was established in 2007 to coordinate state activities for energy independence. The commitment of the state to lead by example creates opportunities for state government to move boldly to achieve its goals, track its progress, measure the results, and report the findings.

In moving to energy independence, the active engagement of every Iowan will be sought as the state works in partnership with others in achieving the goals. While leading ongoing efforts within the state, Iowa can also show the nation how to effectively address the critical, complex challenges of shifting to a secure energy future of affordable energy, cost-effective efficiency, reliance on sustainable energy, and enhanced natural resources and environment.

In accordance with House File 918, "the plan shall provide cost effective options and strategies for reducing the state's consumption of energy, dependence on foreign sources of energy, use of fossil fuels, and greenhouse gas emissions. The options and strategies developed in the plan shall provide for achieving energy independence from foreign sources of energy by the year 2025."

Energy independence is a term which means different things to different people. We use the term to mean that we are charting our own course in the emerging energy economy. Iowa can chart its own course by taking advantage of its resources: a well-educated population and an abundance of natural resources, including rich soil, abundant surface and underground water, and consistent wind patterns. Charting our own course also includes further developing our in-state industry, capturing renewable energy, and working toward improved energy efficiency. Charting our own course will allow Iowa to manage its economic destiny while protecting our environment, while creating new, "green collar" industries in every corner of Iowa.

Today Iowa is in a remarkable position to capitalize on the current situation globally and at home. Energy drives the economy and has impacts on the environment, undeniable links that are integral for energy security and independence. With the resources available within the state, the combination of significant global changes in energy and research leading to new technologies that continue to drive down the costs of sustainable energy, Iowa can take bold strides toward the goal of energy independence by 2025.

The Office of Energy Independence, with able assistance from hundreds of individuals, organizations, agencies, and advisors, presents its plan for Iowa's Energy Independence.

### Vision

Iowans creating an economically viable and environmentally sound energy future.

### Mission

To achieve a clean and sustainable energy future by

- Providing leadership through education, research, planning, and investment
- Developing policies and resources to produce market transformation

### Guiding Principles

- The state is committed to be a leader in ensuring Iowa's energy future.
- All Iowans are responsible for ensuring Iowa's energy future.
- Iowa values, economic, political, and market factors demand that Iowa is aggressive and innovative in ensuring Iowa's energy future.
- Iowa's policies and initiatives strengthen the economy, improve the environment, and ensure energy security.

### Goals and Strategies

- 1) Engage all Iowans in achieving the state's energy goals
  - a. Provide active state leadership in implementing energy efficient policies and practices.*
  - b. Conduct outreach, education, and promotion activities for participation in Iowa's new energy economy.*
  - c. Incent and recognize model energy communities, corporations, nonprofits, and public entities.*
  - d. Challenge Iowans to take individual responsibility to increase energy efficiency, decrease usage, and improve the environment.*
- 2) Achieve greater energy efficiency
  - a. Develop public policy to improve energy efficiency in the public sector.*
  - b. Develop policies, tools, resources, and financing to optimize energy efficiency for all commercial, residential, nonprofit, and public entities.*
  - c. Incent the commercial, industrial, residential, nonprofit, and public sectors to decrease energy usage.*
  - d. Adopt guidelines for state and regional planning of public transit, public trails, and the transportation of goods.*
- 3) Develop, encourage, and use sustainable and secure energy
  - a. Establish policies to significantly increase the proportion of sustainable energy use in Iowa.*
  - b. Provide tools, resources, and financing to support the development and growth of sustainable energy.*

- c. Create infrastructure to support distribution, transmission, and utilization of sustainable energy.*
  - d. Establish a diverse sustainable energy portfolio that ensures economic growth, energy security, and environmental integrity.*
- 4) Improve Iowa's natural resources and environment
  - a. Establish energy policies, tools, resources, and financing to reduce negative impacts on the environment.*
  - b. Aggressively reduce greenhouse gas emissions in cooperation with government at all levels as well as commercial, residential, and nonprofit entities.*
- 5) Ensure that energy is affordable
  - a. Develop policies, tools, resources, and financing to ensure affordable energy access for market transformation.*
  - b. Adopt energy policies and programs to ensure affordability for Iowa's low-income, disabled, and elderly populations.*

## Policy Recommendations

### ***Iowa State Government Leading by Example***

- Require all existing state-owned buildings to have energy audits and implement energy efficiency retrofits to serve as effective energy management models for the private sector. All new state buildings will meet or exceed high energy efficiency performance standards.
- Create opportunities for state employees to reduce overall miles commuted through telecommuting, ride share, and public transit.
- In cooperation with the appropriate state agencies, map priorities for transmission, pipeline, distributed generation, road, transit, rail, trail, and other infrastructure investments needed to enhance the state's energy independence efforts.

### ***Other Policy Recommendations for Iowa***

- Set numeric goals to promote and achieve all cost-effective energy efficiency measures, including attention to affordability issues.
- Direct energy providers to increase energy efficiency efforts, including education.
- Incent and require energy providers to increase the use and supply of renewable energy.
- Improve energy efficiency of existing buildings and new construction through implementation and enforcement of energy codes, and provide incentives for energy efficient construction that exceeds the required efficiencies.

## **Iowa Plan for Energy Independence**

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- Adopt a statewide energy efficiency building labeling system for residential, commercial, and industrial complexes.
- Inform energy decisions using a statewide integrated resource planning model.
- Set standards to reduce greenhouse gas emissions 80% by 2050 through multiple strategies.
- Include greenhouse gas emissions as a criterion for the DNR to issue air permits.
- Encourage Iowa's production of cost-effective renewably-generated electricity.
- Accelerate the infrastructure development and use of renewable fuels for all transportation in Iowa.
- Join 16 states that have adopted or are considering adopting the California emission standards for passenger vehicles.
- Establish a statewide public education, promotion, and branding initiative to create universal acceptance of the value, use, and return on investment of energy efficiency and renewable energy.
- Establish and implement a recognition program for model energy communities, corporations, non-profits, and public entities.
- Encourage construction of electric transmission for the continued development of renewable resources.
- Encourage research and commercialization of new renewable energy, renewable fuels, and energy efficiency initiatives.

### **Implementation and Update**

The Office of Energy Independence (OEI) will be responsible for implementing the Iowa Plan for Energy Independence. OEI will develop an implementation plan that outlines specific activities to accomplish each strategy and timeframes for completion. The activities to carry out the intent of the mission, goals, and strategies contained in the Plan will provide a clear map to begin ensuring Iowa's energy future. Activities of the Office of Energy Independence in its first year of operation will be focused on implementing the Plan and continuing to collect baseline data and complete projections that will inform planning and activities of the OEI and the Power Fund.

A key component of the implementation plan will be the identification of performance measures to track progress in achieving the strategies and, ultimately, the goals set forth for energy independence. Performance measures will provide a basis for annual review and update of the plan.

An annual review of the Plan and progress made toward achieving Iowa's energy goals will provide the Office of Energy Independence with a venue through which it can provide the Governor, Lieutenant Governor, and the General Assembly an opportunity to evaluate progress toward achieving goals.

## **Introduction to Energy Independence in Iowa**

Iowans expect the state to take leadership in ensuring advancement and protection of their interests. The Office of Energy Independence is stepping forward with a framework for the future of Iowa's energy systems and their links with the economy and the environment. This framework will be used to focus policy and initiatives in priority areas, with partnerships of public, private, and nonprofit entities driving implementation. With this collaborative approach, Iowans will begin to reap the benefits of these moves toward energy independence.

Energy independence claimed the spotlight as part of House File 918, enacted by the Iowa General Assembly and signed by Governor Culver in 2007, which established the Office of Energy Independence. The legislature calls for an annual Energy Independence Plan, and created the Iowa Power Fund Board, the Iowa Power Fund, and other related measures. The Office of Energy Independence was established in Section 2 of the bill "to coordinate state activities concerning energy independence."

In accordance with House File 918, "the plan shall provide cost effective options and strategies for reducing the state's consumption of energy, dependence on foreign sources of energy, use of fossil fuels, and greenhouse gas emissions. The options and strategies developed in the plan shall provide for achieving energy independence from foreign sources of energy by the year 2025."

Energy independence is a term which means different things to different people. We use the term to mean that we are charting our own course in the emerging energy economy. Iowa can chart its own course by taking advantage of its resources: a well-educated population and an abundance of natural resources, including rich soil, abundant surface and underground water, and consistent wind patterns. Charting our own course also includes further developing our in-state industry, capturing renewable energy, and working toward improved energy efficiency. Charting our own course will allow Iowa to manage its economic destiny while protecting its environment.

This document is the first annual Iowa Energy Independence Plan, provided to the General Assembly and which includes direction and priorities for Iowa's energy future. Developed early in the life of the Office of Energy Independence, the Plan represents initial contributions of state agencies and Iowans from across the state to the vision and priorities for Iowa's specific actions toward energy efficiency, increasing the development and use of sustainable energy, and ensuring energy security. The goals and strategies within the Plan span short-term, intermediate-term, and long-term expectations of Iowans for significant shifts in how energy is viewed, produced, managed, and used.

The Energy Independence Plan reflects thoughtful consideration of the inputs provided by stakeholders across the state. It seeks to stretch Iowans' thinking and actions where energy is concerned and to establish expectations for long-term commitment to energy independence. The goals outlined illustrate common Iowa values and the ongoing commitment to our natural resources and environment.

Recognizing that talking is not enough, the Plan emphasizes action. The framework leads to specific initiatives to achieve specific results. Those results will be tracked and measured, allowing the state to report on the progress made in its goals.

Energy systems are viewed holistically in this Plan. Energy cannot stand in isolation as policy is developed and change is sought. On the contrary, there are clear links between energy, the environment, and the economy. Iowa's Plan embraces those connections and seeks an appropriate balance in those relationships.

### **The Context of Energy Independence**

Taking on the challenges of the state's energy future is a bold step. Establishing the Office of Energy Independence, the Power Fund, its supporting infrastructure, and authorizing financial incentive programs set the state on the path of national leadership in these areas. Why now? What has created the impetus for this head-on challenge?

There is a new convergence of factors that presses Iowa forward. It is no longer possible to maintain an energy status quo. Factors include those over which Iowans exert some control and those where outside factors impact the state. Windows of opportunity have opened as a result of the convergence of time, Iowa's resources and key external conditions. Those include the volatile cost of fossil fuels, the growing acceptance of alternative energy sources, local eagerness to invest in energy infrastructure, and increasing awareness of climate change. The political will has changed as well, on a global, national, state, and local level. Iowa's political leadership is critical for successful market transformation to achieve greater sustainable energy usage.

The road ahead is challenging but holds many rewards for Iowa's economy, environment, and energy systems. Today Iowa is in a remarkable position to capitalize on the current situation to reduce its dependence on foreign sources of energy, while creating new opportunities for job growth in every part of the state. Energy drives the economy and has impacts on the environment, undeniable links that are integral for energy security and independence. With the resources available within this state, the significant changes in the global energy situation, and research leading to new technologies to drive down the costs of sustainable energy, Iowa can take bold strides toward the goal of energy independence by 2025.

### **The Context of Energy Use**

The information in this section begins to outline Iowa's use of energy. Much of the energy data contained in this report is from the Energy Information Administration (EIA) of the U.S. Department of Energy. Generated in 2004, these statistics represent the clearest overall energy picture in Iowa today as measured by the EIA.

Over the last three years the global energy circumstances have changed. The escalating prices of fossil fuels, international political dynamics, and consumption have driven energy costs to all time highs. As a result, new industries have developed, striking a new energy dynamic in Iowa. Newer data convey a

clearer picture of the impact of sustainable energy in Iowa. The convergence of these factors places Iowa in the position to take bold action to create a sustainable and secure energy future.

Iowa continues to rely heavily on energy imported from other states and nations. EIA data indicate that 95.4% of Iowa's energy resources were imported in 2004, remaining relatively unchanged over the last 25 years. Table 1 compares Iowa's energy use to overall energy use in the United States.

**Table 1: Proportions of Energy Resources Used - 2004**

Fuel	Iowa	United States
Coal	36.8%	22.5%
Petroleum	36.1%	40.2%
Natural Gas	18.8%	22.9%
Nuclear	4.2%	8.2%
Renewable Energy*	4.5%	6.2%

\* Renewable Energy includes hydro, geothermal, solar, wind, and biomass.

In 2006, coal, nuclear, and renewables produced a majority of Iowa's electrical generation. Since 2000, there has been noticeable growth in use of renewable energy and natural gas in particular. Table 2 examines Iowa's source of electrical generation in relation to greenhouse gas production.

**Table 2: Electric Net Generation and Related CO<sub>2</sub> Emissions in Iowa by Fuel Type - 2006**

Energy Source	Percentage Share	CO <sub>2</sub> Emissions (thousand metric tons)
Coal	75.6%	39,256
Petroleum	0.5%	255
Natural Gas	5.3%	1,055
Nuclear	11.2%	0
Hydroelectric	2.0%	0
Other Renewables	5.4%	11*

\* "Other Renewables" primarily refers to wind generation.

Energy cost is a critical factor in Iowa's overall energy picture. Iowa's energy bill in 2004 was \$10.1 billion, the highest expenditure ever recorded until that time. Increases in the state's energy expenditures are attributed to higher petroleum and natural gas prices. It is estimated that Iowa's

## Iowa Plan for Energy Independence

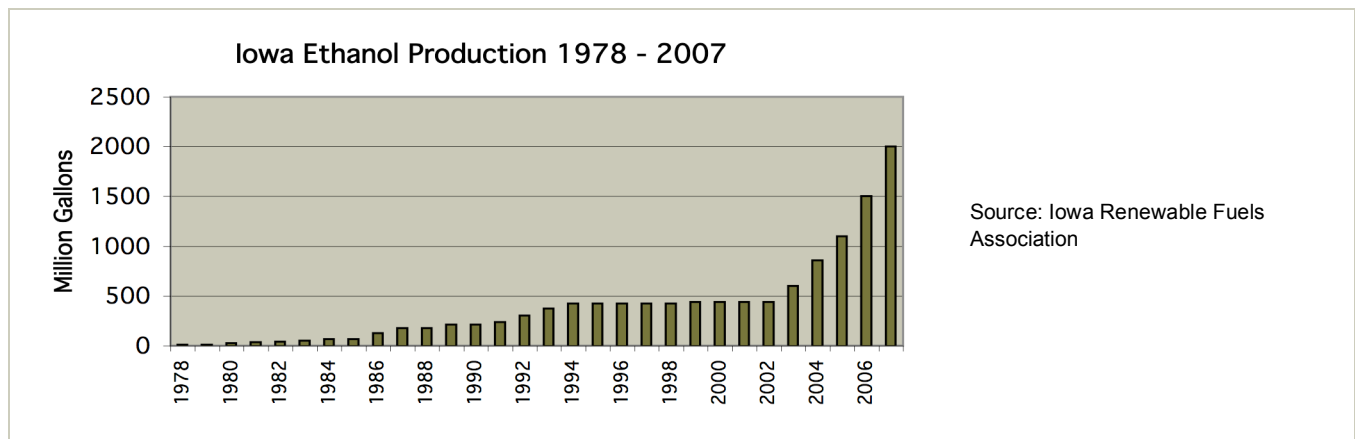
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2006 energy bill was well over \$11 billion. According to the EIA, since 2004 Midwestern gasoline prices have risen 53 percent, from an average of \$1.83 per gallon in 2004 to an average of \$2.80 per gallon in 2007 (through November). Crude oil is up 70 percent from an average of \$41.51 per barrel in 2004 to an average of \$70.56 in 2007(through November), and natural gas is up 17 percent since 2004, moving the national wellhead price from \$5.46 Mcf (per 1000 cubic feet) to \$6.39 Mcf through September 2007.

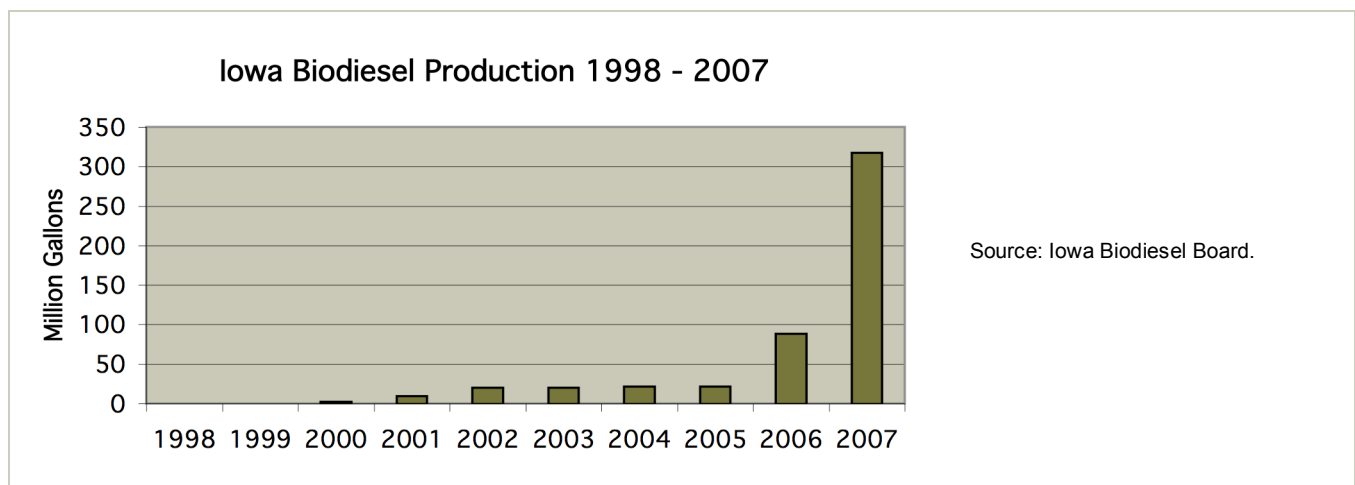
### Evaluation of Renewable Energy Sources

Iowa is the leading producer of both ethanol and biodiesel. As of December 2007, there were 29 ethanol refineries in Iowa with a total annual production capacity of 2 billion gallons, with 1.36 billion gallons of capacity under construction. Iowa's 14 biodiesel refineries had the capacity to produce 317 million gallons annually, with an additional 34 million gallons of capacity under construction. To provide some perspective, Iowans consumed 1.646 billion gallons of motor fuel in 2006.

**Graph 1:**



**Graph 2:**

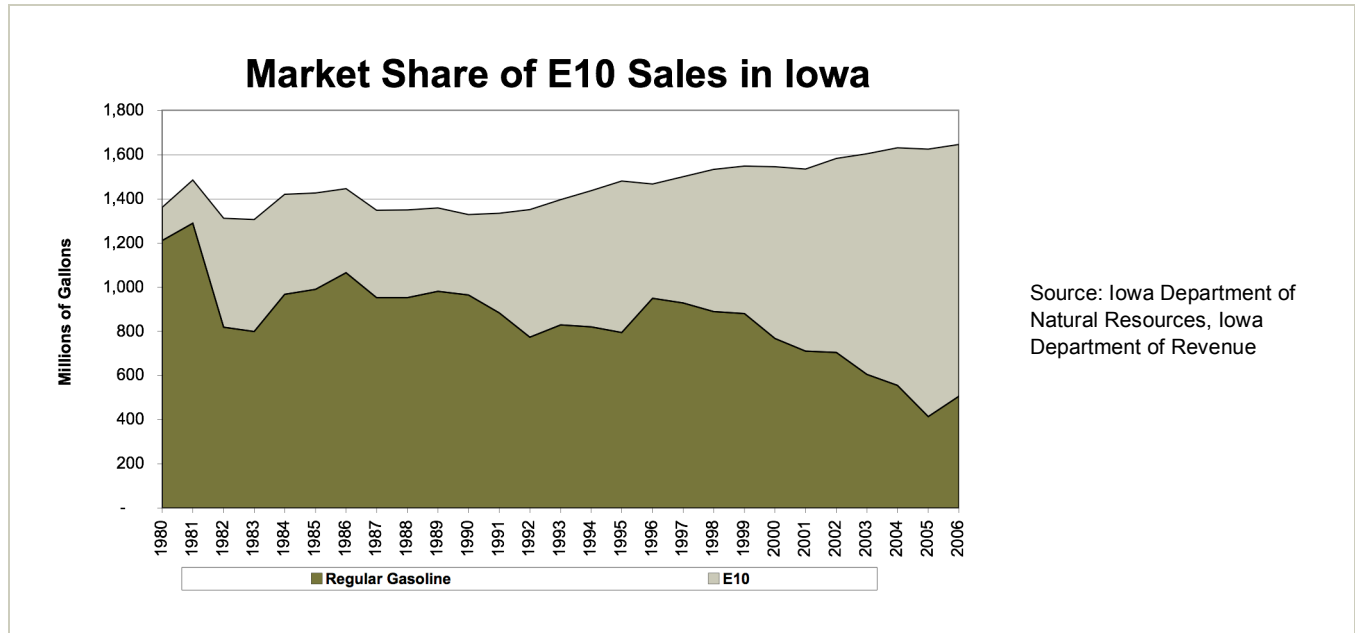




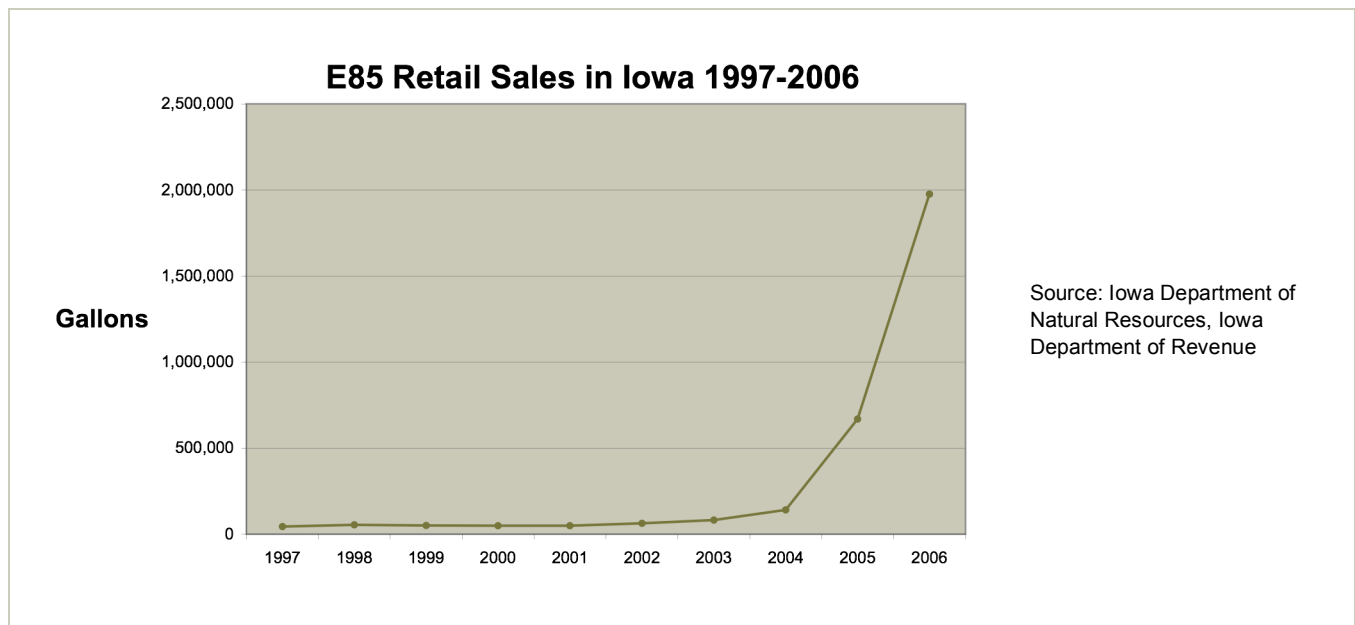
## Iowa Plan for Energy Independence

Ethanol is sold in Iowa as a 10% blend (E10) and 85% blend (E85). Retail sales of ethanol blended gasoline have increased steadily over the last decade, and sales of E85 ethanol skyrocketed from 140,000 gallons in 2004 to nearly 2 million gallons in 2006. Graphs 3 and 4 illustrate the sales growth of E10 and E85 blends.

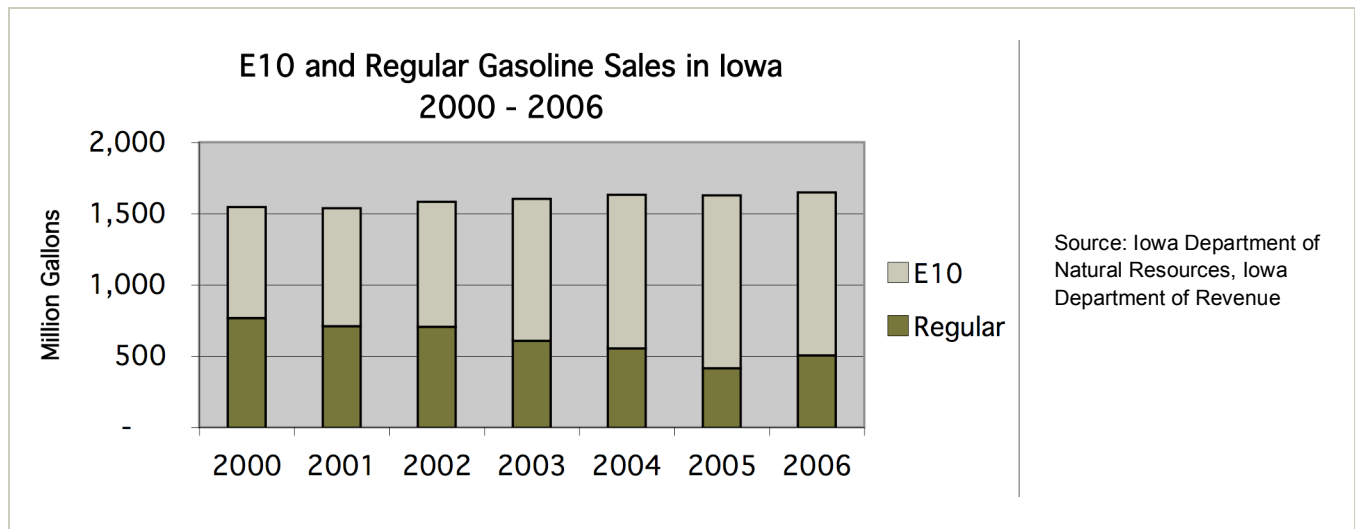
**Graph 3:**



**Graph 4:**

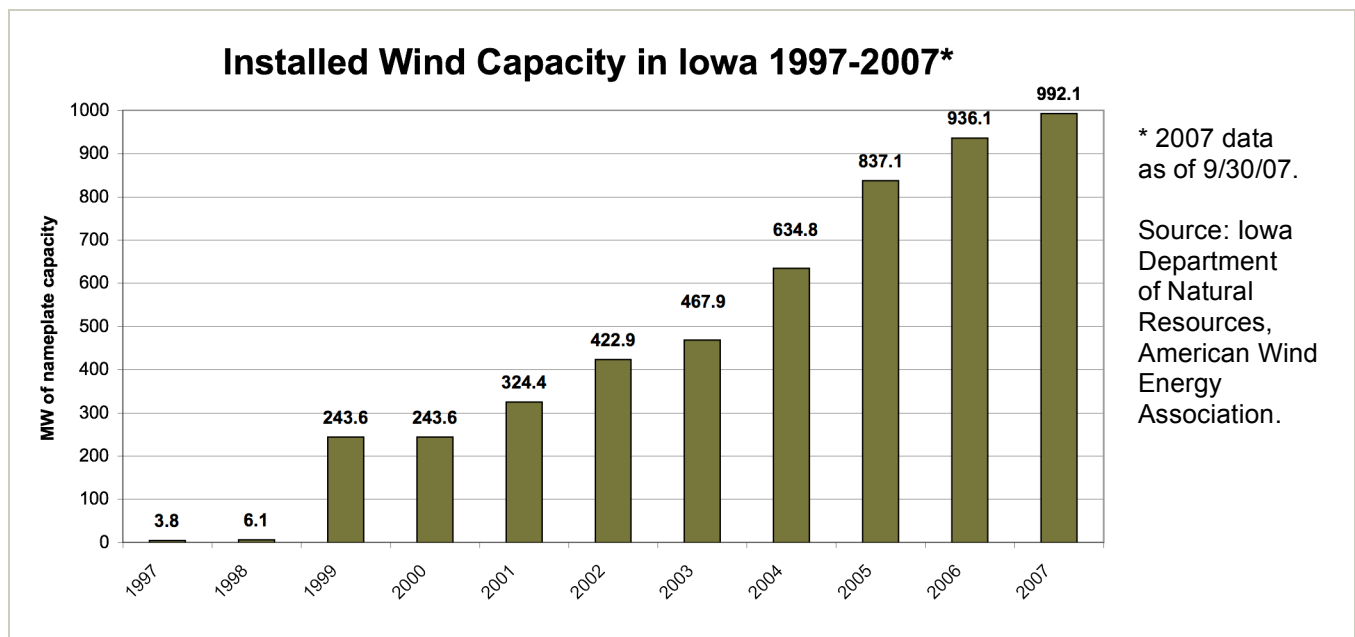


**Graph 5:**



At the end of 2007, Iowa had 992.08 megawatts (MW) of installed wind energy capacity. This ranked Iowa third among all states. In addition, 382.7 MW of additional wind capacity are planned or under construction. Graph 6 illustrates the rapid growth of Iowa's wind energy capacity since the late 1990s. Iowa has also attracted wind industry manufacturers. At the end of 2007, five wind turbine and component manufacturing facilities are operating or under development in Iowa.

**Graph 6:**



In 2005 the U.S. Department of Energy National Renewable Energy Laboratory (NREL) prepared an assessment of the technical potential for energy derived from renewable sources in Iowa. The NREL

report concludes that, in light of resource availability and cost, Iowa has the greatest potential to develop wind and biomass resources.

### **Iowa Energy Independence Plan – Purpose and Use**

The policy intent of the Culver-Judge Administration and General Assembly, coupled with the contextual data, make a strong case for a bold direction toward energy independence. The Plan outlines the direction for the future in terms Iowans can embrace. Success requires the active involvement of all Iowans as stakeholders within their communities and economies.

As a plan by and for Iowans, it is practical and contains little jargon. A public document, the Plan invites ongoing input about the goals and strategies as they are implemented through activities of Iowans in all walks of life.

Iowa's Energy Independence Plan carries with it expectations for significant action by stakeholders. Certainly, it carries a mandate of personal responsibility found in the following pages.

At a policy level, state and local elected officials will find within this Plan the framework for policy to support the goals of energy independence for the state. Also included are policy recommendations with options for immediate, short-term, intermediate, and long-term initiatives.

Executive branch leaders can find direction in the Plan as well. The goals and strategies suggest broad priority approaches that serve to frame the issues around which agencies can implement solutions.

Public entities such as hospitals, libraries, schools, and post-secondary institutions stand to benefit from embracing and participating in Iowa's Plan. Undertaking initiatives to improve energy efficiency can provide the quickest return on their investments. With the guidance of the Plan, public entities can identify and implement their own approaches to improving Iowa's level of energy security.

Nonprofits, as well as businesses and industries, are critical participants in implementing this Plan. Though the state expects to lead by example in its state government policies, the impact of the recommendations can only be seen statewide with the participation of the nonprofit and private sectors in addressing their energy savings needs. Innovation and sharing successful pilot programs will be critical to the impact of energy independence initiatives.

The Office of Energy Independence thanks Iowans for their commitment to an improved energy future and stands ready to support all stakeholders in their efforts to meet the challenges set forth in this Plan. The Office invites interested parties to visit the website, [www.energy.iowa.gov](http://www.energy.iowa.gov), for additional information or to contact staff for assistance.

# **Vision, Mission, and Guiding Principles**

In 2007, Governor Chet Culver and Lieutenant Governor Patty Judge established a vision for Iowa as a national and world leader in sustainable energy production and energy efficiency practices. The Governor and Lieutenant Governor and the General Assembly authored House File 918, which created the Office of Energy Independence and the Iowa Power Fund to carry this vision forward.

The Iowa Power Fund Board has developed the fundamental building blocks — a vision, a mission, and guiding principles — that will guide and direct the Office of Energy Independence and the Power Fund. The mission of the Office of Energy Independence clearly states the purpose of the Office and outlines necessary efforts to work towards a more sustainable, clean energy future. The vision and mission will be integrated in all elements of the Office's work to maintain a clear focus and achieve results. The Board has also developed a series of principles that articulate the values and beliefs that will guide the decision-making and conduct of the Office. These principles will be considered foremost in all work of the Office and provide the basis for the goals and strategies outlined in the Iowa Plan for Energy Independence.

## **Vision**

Iowans creating an economically viable and environmentally sound energy future.

## **Mission**

To achieve a clean and sustainable energy future by

- Providing leadership through education, research, planning, and investment
- Developing policies and resources to produce market transformation

## **Guiding Principles**

- The state is committed to be a leader in ensuring Iowa's energy future.
- All Iowans are responsible for ensuring Iowa's energy future.
- Iowa values, economic, political, and market factors demand that Iowa is aggressive and innovative in ensuring Iowa's energy future.
- Iowa's policies and initiatives strengthen the economy, improve the environment, and ensure energy security.

## **Energy Independence Goals and Strategies**

### **Goals**

The Office of Energy Independence (OEI) sets the strategic direction for Iowa's new energy future by identifying goals to achieve desired results. After conducting outreach efforts, the OEI developed goals utilizing the combined input of individuals, business and industry, community leaders, government and public agencies, and other stakeholders. The vision, mission, and guiding principles of the OEI are reflected in the five goals, which define the outcomes necessary for Iowa to continue to be a national leader in energy efficiency and sustainable energy. The goals were developed with consideration of the need to create an environment that allows innovation while balancing practicality and cost effectiveness. The goals detailed below inform the development of strategies, activities, and policies that support the near and long-term accomplishments of the Office of Energy Independence.

#### **1) Engage all Iowans in achieving the state's energy goals**

Iowans have a proud history of being resourceful and innovative and should be recognized and commended for their active involvement and leadership in creating their energy future. The Office of Energy Independence expects that stakeholders will take on the challenges set forth in this plan and create their own "footprint" in Iowa's energy leadership. Iowans will recognize and take the approach that "we are all in this together," accomplishing great things through collaboration, education, and shared goals.

#### **2) Achieve greater energy efficiency**

An energy independence plan for Iowa should not merely focus on developing and expanding the use of new energy sources and technology; there must be a concerted effort to optimize energy use in all market sectors and to maximize the effectiveness and value of energy options.

#### **3) Develop, encourage, and use sustainable and secure energy**

Iowa must continue to attract, maintain, and grow the research, production, and usage of sustainable energy. The state must ensure the availability of and access to energy that is socially, politically, and environmentally sustainable for Iowa's short- and long-term future.

#### **4) Improve Iowa's natural resources and environment**

Energy cannot stand in isolation as policy is developed and change is sought; there are clear links between energy, the environment, and the economy, and a balance in those relationships must be promoted and supported. Stewardship of the land, air, and water is essential to a sustainable clean energy future. Development and expansion of energy technologies must consider impacts on Iowa's

valuable natural resources and environment, including the impacts of the state's greenhouse gas emissions.

### **5) Ensure that energy is affordable**

Affordability drives market demand for any product or service and is a key factor in creating a culture of sustainable energy practices and behavior. Iowa must ensure that sustainable energy developed and used in this state is affordable to all of its residents, cost-effective in its production, including the consideration of full life cycle impact of an energy resource.

#### **Strategies**

To ensure the practicality and utility of the Iowa Energy Independence Plan, it is designed as an adaptable tool. The goals and strategies are developed to guide activities that can be updated on an ongoing basis. The strategies outlined below direct the course of action that the OEI must undertake to achieve these goals in both the short- and long-term future. Strategies were developed with many considerations in mind, including existing policies, feasibility, and incorporation of the expected roles of not only the OEI, but state government, business and industry, communities, and individuals. The specific activities serve as examples that may carry out the strategies and will be developed in response to stakeholder input, state and federal policy impacts, availability of resources, and market factors. Performance measures will be developed for each strategy to track progress in achieving strategies and, ultimately, goals set forth in the Plan.

#### **1) Engage all Iowans in achieving the state's energy goals**

##### *a. Provide active state leadership in implementing energy efficient policies and practices.*

*Examples of activities may include:*

- Energy efficiency standards and practices for public buildings and vehicles
- Increase telecommuting capacities and opportunities at the state level

##### *b. Conduct outreach, education, and promotion activities for participation in Iowa's new energy economy. Examples of activities may include:*

- Public service announcements, earned media events, and activities in partnership with the state, industry, and business to highlight Iowa's energy future
- A "branding" effort to raise the profile of the OEI and Iowa as the national leader in energy efficiency and sustainable energy

##### *c. Incent and recognize model energy communities, corporations, nonprofits, and public entities. Examples of activities may include:*

- Set goals and standards to define "model" sustainable energy implementation
- Create opportunities to highlight innovative Iowa approaches as a part of outreach and education

*d. Challenge Iowans to take individual responsibility to increase energy efficiency, decrease usage, and improve the environment. Examples of activities may include:*

- Actively partner with communities, schools, libraries, employers, civic groups, and others to develop effective materials and resources to inspire Iowans to contribute to Iowa's energy future
- Support and encourage communities to engage their citizens in a cooperative approach to identifying energy solutions

### 2) Achieve greater energy efficiency

*a. Develop public policy to improve energy efficiency in the public sector. Examples of activities may include:*

- Energy efficiency standards and practices for public buildings and vehicles
- Increase telecommuting capacities and opportunities at the state level

*b. Develop policies, tools, resources, and financing to optimize energy efficiency for all commercial, residential, nonprofit, and public entities. Examples of activities may include:*

- Guidance for identifying energy inefficiencies and cost-effective solutions
- Incentives for individuals and businesses to purchase and use energy efficient products and practices

*c. Incent the commercial, industrial, residential, nonprofit, and public sectors to decrease energy usage. Examples of activities may include:*

- Establish guidelines and goals for decreasing Iowa's overall energy use and direction for organizations and individuals to take action to decrease energy usage
- Financial incentives for incorporating energy usage measures into planning

*d. Adopt guidelines for state and regional planning of public transit, public trails, and the transportation of goods. Examples of activities may include:*

- Promote studies for localities to identify the feasibility of developing public transit
- Implement statewide programs to reduce greenhouse gas emissions and improve energy efficiency
- Increase the use of rail for transporting goods, including a review of intermodal transportation

### 3) Develop, encourage, and use sustainable and secure energy

*a. Establish policies to significantly increase the proportion of sustainable energy use in Iowa. Examples of activities may include:*

- Increase the research and development of new energy technologies
- Set goals for state government usage of sustainable energy options

- b. Provide tools, resources, and financing to support the development and growth of sustainable energy. Examples of activities may include:*
    - Guidance for localities to incorporate sustainable energy considerations in their economic development and financial planning
    - Incentives to foster local and community ownership and development of small-scale renewable energy production
    - Scenario planning for development and growth of sustainable energy resources
  - c. Create infrastructure to support distribution, transmission, and utilization of sustainable energy. Examples of activities may include:*
    - An assessment of current capacities and limitations
    - Develop strategies to ensure that new energy technologies have access to mechanisms of transmission and distribution
  - d. Establish a diverse sustainable energy portfolio that ensures economic growth, energy security, and environmental integrity. Examples of activities may include:*
    - Set benchmarks for short- and long-term development and institutionalization of sustainable energy production and usage
    - Develop guidelines for energy industries that incorporate considerations of economic factors, energy security, and environmental impact in Iowa
- 4) Improve Iowa's natural resources and environment
  - a. Establish energy policies, tools, resources, and financing to reduce negative impacts on the environment. Examples of activities may include:*
    - Develop guidance for individuals, business and industry, and the public sector to incorporate consideration of environmental impacts in planning and behavior
    - Incorporate incentives into current energy programs and grants for the inclusion of impact assessments and efforts to minimize environmental impact
  - b. Aggressively reduce greenhouse gas emissions in cooperation with government at all levels as well as commercial, residential, and nonprofit entities. Examples of activities may include:*
    - Actively partner with Iowans to meet the goals established by the Midwestern Regional Greenhouse Gas Reduction Accord
    - Adopt short- and long-term greenhouse gas reduction benchmarks
- 5) Ensure that energy is affordable
  - a. Develop policies, tools, resources, and financing to ensure affordable energy access for market transformation. Examples of activities may include:*
    - Conduct education and outreach to all Iowans about the affordable options
    - Develop incentives for individuals and businesses to purchase and use energy efficient products and practices



- b. Adopt energy policies and programs to ensure affordability for Iowa's low-income, disabled, and elderly populations. Examples of activities may include:*
- Encouragement of consumer energy education
  - Support energy efficiency programs, such as weatherization

### Policy Recommendations

It is the expectation that the goals and strategies outlined in this Plan will culminate in significant change for a stronger Iowa-based energy future. Positioning the state as the national leader in efficient and renewable energy innovation, production, distribution, and utilization carries policy challenges for state leaders. As required by the legislation that calls for an annual Energy Independence Plan, recommendations are offered to ensure steady progress toward Iowa's goals.

The proposed energy future for Iowa includes opportunities for all individuals and all entities within the state. Policy to support these changes will assure the engaged participation of the entire state. Every Iowan, no matter their position or their job, has a responsibility outlined within the scope of this Plan to take action, and it is important to inspire broad participation and opportunity.

Policymakers have a special opportunity and responsibility in setting forth policy to ensure balanced and steady movement toward Iowa's energy future. The Office of Energy Independence, through this Plan, emphasizes the importance of thinking of the challenges in terms of systems, of recognizing the imperative for undertaking sustained initiatives now, and of establishing priorities with immediate gains as well as intermediate and long-term results.

Policy can be established and implemented through several means. Legislation and Executive Orders will be necessary to ensure achievement of many components of this Plan. New legislation may not always be necessary as agencies can review options under current law and implement initiatives supported by Administrative Code. Some might even suggest that policy change can be voluntary and undertaken as a "movement" within government and across the state. It is difficult to legislate change in personal behavior, yet individual responsibility and commitment are key factors in the shift in Iowa's energy future.

Policy recommendations included in this section are consistent with the guiding principles, mission, goals, and strategies detailed in preceding sections. Used as a framework for Iowa's energy independence, this Plan will suggest and foster additional policy suggestions and innovations in future months and years.

Many of the recommendations are crosscutting, making progress toward more than one goal and involving several strategies. This speaks strongly to the complexity of the issues addressed and suggests thoughtful consideration of policy impacts immediately and longer-term. Reducing the footprint on the environment is a constant consideration. Growing Iowa's economy and expanding the use of renewable, sustainable energy must always be balanced with the consideration of environment. From the perspective of many Iowans, change must be possible for them, and that includes affordability and opportunity. The policy recommendations project steady progress toward a new energy future for Iowa. The following recommendations have been approved by the Power Fund Board and represent the input of stakeholders.

### **Iowa State Government Leading by Example**

- Require all existing state-owned buildings to have energy audits and implement energy efficiency retrofits to serve as effective energy management models for the private sector. All new state buildings will meet or exceed high energy efficiency performance standards.
- Create opportunities for state employees to reduce overall miles commuted through telecommuting, ride share, and public transit.
- In cooperation with the appropriate state agencies, map priorities for transmission, pipeline, distributed generation, road, transit, rail, trail, and other infrastructure investments needed to enhance the state's energy independence efforts.

### **Other Policy Recommendations for Iowa**

- Set numeric goals to promote and achieve all cost-effective energy efficiency measures, including attention to affordability issues.
- Direct energy providers to increase energy efficiency efforts, including education.
- Incent and require energy providers to increase the use and supply of renewable energy.
- Improve energy efficiency of existing buildings and new construction through implementation and enforcement of energy codes, and provide incentives for energy efficient construction that exceeds the required efficiencies.
- Adopt a statewide energy efficiency building labeling system for residential, commercial, and industrial complexes.
- Inform energy decisions using a statewide integrated resource planning model.
- Set standards to reduce greenhouse gas emissions 80% by 2050 through multiple strategies.
- Include greenhouse gas emissions as a criterion for the DNR to issue air permits.
- Encourage Iowa's production of cost-effective renewably-generated electricity.
- Accelerate the infrastructure development and use of renewable fuels for all transportation in Iowa.
- Join 16 states that have adopted or are considering adopting the California emission standards for passenger vehicles.
- Establish a statewide public education, promotion, and branding initiative to create universal acceptance of the value, use, and return on investment of energy efficiency and renewable energy.

- Establish and implement a recognition program for model energy communities, corporations, non-profits, and public entities.
- Encourage construction of electric transmission for the continued development of renewable resources.
- Encourage research and commercialization of new renewable energy, renewable fuels, and energy efficiency initiatives.

## **Implementing the Iowa Plan for Energy Independence**

Implementing the Iowa Plan for Energy Independence will require meaningful participation by all Iowans. With the state government and the Office of Energy Independence leading the way, the Plan will call upon and support individuals, communities, commercial, non-profit, public, and government entities to work in cooperation to successfully implement a new plan for Iowa's energy future.

### **Plan Implementation**

The Office of Energy Independence (OEI) will be responsible for implementing the Iowa Plan for Energy Independence approved by Governor Culver, Lieutenant Governor Judge, and the Power Fund Board. The Plan provided to the Governor and Lieutenant Governor and the General Assembly outlines broad goals and strategies to achieve those goals. OEI will develop an implementation plan that outlines specific activities to accomplish each strategy and timeframes for completion. The activities to carry out the intent of the mission, goals, and strategies contained in the Plan will provide a clear map to begin ensuring Iowa's energy future. OEI will create an implementation plan that is bold, realistic, and economically feasible to ensure that it provides a meaningful guide for the work of the Office.

A key component of the implementation plan will be the identification of performance measures to track progress in achieving the strategies and, ultimately, the goals set forth for energy independence. Performance measures will provide a basis for annual review and update of the plan.

### **Annual Review and Updating the Plan**

House File 918, the legislation that created the Office of Energy Independence and the Iowa Power Fund, required the initial Plan for Energy Independence and also mandates that the Plan be updated and submitted annually to the Governor, Lieutenant Governor, and General Assembly. The Plan has been developed so as not to expire. Each year the Plan will be reviewed with consideration for extension and adaptation to build on successes and meet emerging needs.

An annual review of the Plan and progress made toward achieving Iowa's energy goals will provide the Office of Energy Independence with a venue through which it can provide the Governor, Lieutenant Governor, and the General Assembly an opportunity to evaluate progress toward achieving goals. A review might include consideration of the following:

- An assessment of economic, political, and market factors and community-wide needs.
- A review of research, development of new technology, and best practices in energy production and use in other states and nationally, by industry, commercial, government, and public entities.
- A review of the goals to determine whether they remain appropriate in light of the current internal and external environment.
- An evaluation of progress toward achieving each strategy.

- An evaluation of progress in conducting activities outlined in the implementation plan.

### **Plans for the Office of Energy Independence in 2008**

Activities of the Office of Energy Independence in its first year of operation will be focused on implementing the Plan and continuing to collect baseline data and complete projections that will inform planning and activities of the OEI and the Power Fund. The OEI has identified the following additional activities for 2008:

- Identify and collect additional data to develop a complete current picture of energy production, management, delivery, and use in Iowa. The OEI will increase capacity for data collection and analysis to support further development and implementation of the Plan.
- Project future energy use by sector and form of energy used by working with the state's energy providers and conducting independent analysis.
- Assess the environmental impacts of Iowa's energy use.
- Assess the economic impacts of Iowa's energy use.
- Undertake scenario planning with consideration of energy shortages, cost barriers, changes in Iowa's energy portfolio, and impacts of prioritized investments in sustainable energy. The scenarios will serve as models for planning to forecast impacts on energy, the environment, and the economy.
- Further develop and seek input and collaboration on state policy options for achieving Plan goals.
- Work with appropriate public and private sector partners to monitor progress in achieving goals, review, and update the Plan on an annual basis.

## **Methodology and Input for Plan Development**

The Iowa Power Fund and the Office of Energy Independence were created by Governor Chet Culver, Lieutenant Governor Patty Judge, and the General Assembly in the 2007 legislative session. That legislation directed the Office of Energy Independence to develop an Iowa Energy Independence Plan in cooperation with the Department of Natural Resources, public and private partners, interested parties, and the general public.

The process to complete the plan included involvement of representatives of the energy, environmental, agricultural, and business interests, as well as the public. First steps in forming the plan were to engage the Iowa Power Fund Board in discussion and input for the Plan. Engagement of the State Energy Council provided an essential review. This advisory board to the Office of Energy Independence played a key role in the Plan's development.

As a part of the Plan's development, the Office sought public input. Public meetings were held across the state in Council Bluffs, Fort Dodge, Coralville, and Des Moines. The conversations focused on energy efficiency, transportation, renewable energy, biofuels, climate change, greenhouse gases, coal, education, and the economy. More than 200 people attended the sessions, with 65 individuals providing oral comments and 82 submissions of written comments. These comments were a consideration in the development of the Plan.

Woven through many of the outreach comments was the notion that Iowa's energy, environment, and economy are inextricably linked, which is a critical consideration as the state moves forward in planning and implementation.

Finally, the Plan was reviewed and approved in December 2007.

## **Summary of Public Input**

In September and early October of 2007 the Office of Energy Independence went across the state to engage Iowans and gather public input for the Energy Independence Plan. Forums were held at the Iowa Historical Building in Des Moines, the Community Center in Coralville, Iowa Western Community College in Council Bluffs, and Iowa Central Community College in Fort Dodge.

This is a summary of the input gathered from 65 individuals that provided oral comments, and 58 individuals that submitted written comments.

### **Energy Efficiency**

- Importance of energy efficiency (general): 30
- Focus on public buildings: 5
- Efficiency in electric generation, combined heat and power: 4
- Recycling: 4
- Tax credits for efficiency (energy efficient design, orientation of houses, energy efficient technologies): 3
- Set ambitious annual energy savings goal for utilities: 3
- Promote energy efficiency in buildings in particular: 2
- Ban incandescent lights: 2
- Energy efficiency in crop production/agriculture: 2
- Wise fertilizer use in agriculture: 2
- Planting trees: 2
- Tighten & enforce building codes: 2
- Efficiency should be a power resource for utilities: 1
- Rebates not available in all Iowa communities: 1
- Inclining block rates for energy: 1
- Support tighter national appliance efficiency standards: 1
- Energy efficient lighting a priority: 1
- Support development of less toxic efficient light bulbs: 1
- compact florescent recycling: 1
- Help businesses with cost of Leadership in Energy and Environmental Design, Energy Star designations: 1
- Every Iowa home, business, organization should have an energy audit: 1



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- Follow Waverly Light & Power example: 1
- Efficient manufactured housing: 1
- Extra tax on large homes: 1

### **Transportation**

- Alternative/public transportation: 7
- Railroads: 5
- Plug-in hybrids, electric cars: 5
- Corporate Average Fuel Economy standards/fuel economy important: 4
- Promote smart land use, smart urban planning: 4
- Change car taxation to be based on fuel economy: 1
- Increase gas tax: 1
- Bike trails: 1
- Avoid unnecessary air travel: 1
- Encourage telephone conferencing: 1

### **Renewable Energy**

- Support renewable energy (general): 9
- Mentions of support for specific RE technologies:
  - Wind: 25
  - Solar: 22
  - Geothermal: 11
  - Biodiesel: 5
  - Biomass: 5
  - Ethanol: 4
  - Passive solar: 3
  - Biofuels (general): 3
  - Hydro: 2
  - Hydrogen: 1
  - Industrial hemp: 1
- Support small renewable energy systems: 12
- Local ownership of renewable energy: 7
- Waste-to-energy (solid waste, manure): 7
- Improve net metering: 6
- Renewable Portfolio Standard/Renewable Energy mandates: 5
- Improve interconnection procedures: 4

## **Iowa Plan for Energy Independence**

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- Importance of sustainability in renewable energy production: 4
- Support community-based renewable energy: 2
- Increase Alternative Energy Revolving Loan Program funding: 2
- State production tax credit for renewables: 1
- Must end reliance on all fossil fuels & nuclear energy: 1
- Make sure local zoning does not restrict small renewables: 1
- Rebates for small renewable energy through utility energy efficiency programs: 1
- Regulatory reform to support renewable energy, energy efficiency: 1
- Renewable energy incentives for municipal utilities as well: 1
- Importance of transmission: 1
- Incentives for industry to convert to renewables: 1
- Decentralized power production/centralized energy management (by utilities): 1
- Distributed generation: 1
- Support renewable base load technologies: 1
- New tariff to encourage community wind: 1
- Research storage of wind: 1

### **Biofuels**

- General concern about ethanol, not too much emphasis on ethanol: 14
- Alternative feedstock's for ethanol (cellulosic, other): 11
- Food vs. fuel concern: 5
- Alternative energy, combined heat and power for ethanol plants: 3
- Concern about water use at ethanol plants: 2
- Support corn-based ethanol: 2
- Increase in-state use of biofuels, renewable energy: 2
- More diesel cars available: 2
- Better availability of E85, biodiesel: 1
- Soil conservation must accompany growth in biofuels, biomass: 1
- Food, fuel not in competition: 1
- Use biofuels in public fleets: 1
- Mandate use of renewables in all motor fuels: 1

### **Climate Change, Greenhouse Gases**

- Concern about greenhouse gas emissions (general): 11
- Set goal of 80% greenhouse gas reduction by 2050: 10
- If new coal plants approved, can't meet future greenhouse gas limits: 2
- Carbon sequestration in soil: 2
- Roadside vegetation for carbon capture: 1
- Set goal of carbon-neutral Iowa: 1
- Technical assistance to farmers re: carbon sequestration: 1
- Iowa only produces small percentage of total greenhouse gas emissions: 1
- Look at the European Union as a model: 1
- Establish/facilitate Iowa-based carbon offset program: 1

### **Coal**

- No new coal plants: 22
- Energy efficiency cheaper for needed capacity than coal: 2
- Load growth cannot be met with efficiency & renewables alone, need a new coal plant: 2
- Support research and development to be able to utilize coal: 1
- Concern about coal's health effects: 1

### **Education**

- General energy/energy efficiency education: 13
- Job training/community colleges: 3
- Ethanol awareness/education: 1
- Community education centers: 1
- Create "Craigslist for energy information": 1

### **Economy**

- Renewables, energy efficiency benefit economy (general): 3
- Renewables, energy efficiency bring new, good jobs: 3
- Consider impact on consumers: 2
- Try to bring solar energy industry to Iowa: 2
- Consider impact on economic competitiveness: 1

## **Iowa Plan for Energy Independence**

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- Renewables bring economic benefits to rural Iowa: 1
- Adopt policies that don't threaten the economy: 1
- Help private citizens invest in renewables development: 1
- Abundant, affordable energy promotes economic growth: 1
- One state pursuing policies on its own can harm economy: 1
- Concern about increased cost of energy (increase that has already happened): 1

### **Iowa Energy Independence Plan**

- Utilize existing plans such as Energy Policy Task Force report: 4
- Learn from other countries: 1
- Include both short-term and long-term recommendations: 1
- Need long-term vision: 1
- Use greenhouse gas to measure success: 1

### **Power Fund**

- Support Iowa Stored Energy Park project, other compressed air storage projects: 4
- Assist existing industry too (biofuels): 3
- Support research and development with commercial target: 1
- Invest in Iowa: 1
- Fund biofuels innovation: 1
- Support carbon sequestration: 1
- Coordinate research efforts w/ universities, fund research at universities: 1
- Intellectual property rights should stay with grantee: 1
- Priority on projects with highest return on investment and broadest impact: 1
- Fund projects with demonstrated need: 1
- Provide grant funds for renewable energy feasibility studies: 1
- Provide grant funds to purchase renewable energy technology: 1
- Provide grant funds to help build Leadership in Energy and Environmental Design buildings: 1
- Provide grant funds for energy education: 1
- Fund community energy centers: 1

### Other

- Low income energy assistance: 4
- Work with local governments: 3
- Adverse health effects from fossil fuel use: 1
- Environmental standards in trade agreements: 1
- Local food systems: 1
- Incentives to include energy in city comprehensive plans: 1
- Consider existing entities, infrastructure: 1
- The Office of Energy Independence should set up a website to disseminate information: 1
- “Stray current” is a risk: 1

## **Appendix: Energy Information Report**

Please go to the Office of Energy Independence website at [www.energy.iowa.gov](http://www.energy.iowa.gov) if you would like a copy of the Appendix, or contact the Office of Energy Independence by telephone at 515-281-0182.





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