



Bioenergy Development

Report to the Legislature

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Executive Summary

The Minnesota Department of Agriculture (MDA) is committed to maintaining and growing Minnesota's leadership in the biofuels sector. To that end, the Department is actively pursuing activities at the federal and state level to influence policy and capitalize on financial resources for promoting and achieving greater production and use of biofuels in Minnesota.

MDA has engaged in several efforts to influence federal policies and standards for biofuels. The Department provided comments to the U.S. Environmental Protection Agency (EPA) in its rulemaking process for the federal Renewable Fuel Standard (RFS2); the final rule includes provisions that address certain MDA concerns. MDA also provided comments to the EPA in its decision about increasing the allowable content of ethanol in gasoline from 10 to 15 percent. In addition, MDA staff serves on various federal technical committees through the American Society for Testing and Materials and the Renewable Fuels Association that establish biofuels industry standards for fuel, vehicles and equipment.

The federal government provides a variety of financial incentives for biofuels development, primarily through the American Recovery and Reinvestment Act of 2009 (ARRA, the "stimulus package") and the U.S. Departments of Agriculture (USDA) and Energy (DOE). MDA has worked to identify appropriate resources for Minnesota, disseminate information to potential applicants, and assist applicants in preparing materials for submission. For instance, MDA provided a letter of support to an entity seeking DOE funding for advanced biorefinery operations, and reviewed application materials for a consortium seeking a joint USDA/DOE research grant. MDA is also engaged in opportunities at the state level, such as the legislatively-mandated Green Enterprise Assistance team that helps bioenergy companies navigate through state programs, agencies and services.

MDA also tracks the outcome of incentive programs and works with other agencies to determine potential strategies for improving Minnesota's "track record" in securing federal funds. Minnesota entities have experienced success in securing these resources—for instance, in 2009 seven Minnesota producers were deemed eligible to receive payments through USDA's Advanced Biofuel Payment Program. In addition, 159 projects in Minnesota received over \$6 million in grants and loans through USDA's Rural Energy for America Program in 2009. Based on preliminary analyses by MDA and the Minnesota Office of Energy Security, Minnesota entities have received more funding through USDA than DOE. Although Minnesota has many assets in seeking federal resources, such as interagency collaboration and a strong research base, certain factors like access to private capital are barriers that the state could improve upon.

Introduction

This report is submitted pursuant to Minnesota Laws 2010, Chapter 333, Section 38:

Bioenergy Development; Report.

The commissioner of agriculture shall actively pursue federal and other resources available to promote and achieve greater production and use of biofuels in this state, including but not limited to increasing the availability of retail fuel dispensers for E85 and intermediate ethanol-gasoline blends. No later than February 15, 2011, the commissioner shall report on activities and accomplishments under this section to the legislative committees with jurisdiction over agriculture finance.

Background

The Minnesota Department of Agriculture (MDA) has long been a supporter of and advocate for the biofuels industry in Minnesota. Beginning with the establishment of the ethanol producer payment program in the 1980s, MDA has worked for several decades to develop a robust biofuels industry that provides added rural and economic vitality throughout the state. MDA's work—with the help of many important stakeholders and other state government partners—has put Minnesota “on the map” as a national leader in biofuels policy.

In recent years, the federal government has ramped up efforts to build an energy economy that relies largely on home-grown, renewable energy sources—including biofuels. This focus on biofuels has led to new policies and incentives from federal mandates for biofuels production to funding opportunities for advanced bioenergy facilities and dedicated energy crop establishment. States, including Minnesota, are working to capitalize on these opportunities while also pursuing their own goals and initiatives to further state-level biofuels development.

Minnesota continues to pursue cutting-edge biofuels policies through efforts at both the state and national level—and MDA will work to support and champion these efforts. This report outlines the activities MDA is engaged in to help Minnesota achieve its goals for continued biofuels development.

Federal Opportunities

The federal government has established policies, standards and incentives to support current and future biofuels—many of which present opportunities for Minnesota. The Renewable Fuel Standard (RFS2) requires the blending of 36 billion gallons of renewable fuels into the nation's fuel supply by 2022, thereby guaranteeing a national market for biofuels and providing support for production and use at the state level. Minnesota also has the opportunity to influence decisions about industry standards for biofuels and related equipment that help ensure safe and effective products in the marketplace. In addition, federal funding for biofuels has increased in recent years and many grant and loan opportunities are available for biofuels projects. MDA is working to actively pursue these opportunities for Minnesota.

Federal Policies and Standards

This report focuses on the Renewable Fuel Standard (RFS2)—the primary federal policy governing biofuels at the national level—and various industry standards established for renewable fuels and

equipment. These federal efforts have specific impacts for Minnesota's biofuels industries; the Department of Agriculture has been involved in influencing various aspects of each.

Renewable Fuel Standard

States are not required to contribute specific volumes to the RFS2; however, this national mandate bolsters the market for renewable fuels among states—particularly if structured in a manner conducive to existing state policies and industry needs. To this end, MDA has tracked RFS2 rules as drafted by the U.S. Environmental Protection Agency (EPA) and responded to requests for comments when appropriate. In September 2009, MDA sent a letter to the EPA providing comments on three provisions in the RFS2: methodologies for lifecycle greenhouse gas analyses, exemptions from greenhouse gas thresholds for certain existing biofuels plants, and proposed increases in the allowable content of ethanol in gasoline.

Several of MDA's comments were addressed in the EPA's preamble to the final RFS2 rule, issued in March of 2010 and made effective the following July.¹ For example, EPA acknowledged some issues raised by MDA and other commenters regarding the petroleum baseline against which renewable fuels are compared; EPA made changes to its modeling to address concerns. In addition, EPA's final RFS2 rule did not finalize an expiration date by which existing corn ethanol facilities would be exempt from meeting the 20 percent greenhouse gas threshold to avoid the closure of plants that might find it too expensive to retrofit at the end of an exemption period. EPA also acknowledged MDA's comment that existing facilities exempt from greenhouse gas threshold requirements should not be discouraged from seeking modifications that improve efficiencies and/or environmental impacts.

More generally, MDA continues to work towards greater use of renewable fuels in Minnesota through mandates for ethanol and biodiesel use, thereby contributing to national RFS2 requirements. Minnesota law currently requires the blending of 10 percent ethanol and 5 percent biodiesel into the state fuel supply, increasing to 20 percent by 2013 and 2015, respectively. At current levels, Minnesota is blending approximately 239 million gallons of ethanol and 29 million gallons of biodiesel.² Minnesota also has a goal of producing one-fourth of its ethanol from cellulosic materials by 2025, and several existing corn ethanol plants are working to transition to cellulosic ethanol production in future years.³

Of the 36 billion gallons required by the RFS2, 15 billion gallons can come from traditional corn ethanol and 21 billion gallons from "advanced" biofuels including cellulosic ethanol and biomass-based diesel. Minnesota's current and future mandates for renewable fuels contribute to these federal goals, while the RFS2 provides national credence towards Minnesota's efforts.

E15 and Higher Ethanol Blends

In March 2009, an ethanol industry group called Growth Energy requested a waiver from the U.S. EPA under section 211(f)(4) of the Clean Air Act (CAA) to allow for an increase in ethanol blends from 10 percent (E10) to up to 15 percent (E15). According to the request, the E10 "blend wall" represents an artificial ceiling on the market that, unless removed, will result in an insufficient market for ethanol to meet RFS2 requirements.

EPA accepted comments on the E15 waiver application through May 2009; MDA submitted comments in support of E15 but noted that even with 15 percent ethanol blends the nation would fall short of the

¹ 75 CFR 14689, March 26, 2010

² The figures for biodiesel represent use in highway diesel-biodiesel blends.

³ MS §41A.10, subd. 2.

RFS2. MDA encouraged EPA to approve E15 while continuing to consider higher blends such as E20. In October 2010, after several delays, EPA announced its decision to allow E15 in 2007 and newer vehicles; EPA has indicated intent to issue a second decision on 2001 and newer vehicles in 2011 following completion of additional DOE testing. EPA's decision also included proposed labeling rules for pumps that dispense E15. MDA commented on the proposal by encouraging EPA to consider not requiring a label, or otherwise modifying the proposed label design to avoid unnecessary confusion and negative perception among retailers and consumers.

The impact of the EPA's 2007 and newer approval (15 percent of the private fleet in Minnesota) is anticipated to have little to no impact on the market; the cost to retailers for installing pumps that would dispense E15 to such a small market segment likely prohibits implementation. Even if the EPA approves E15 in 2001 and newer models (50 percent of the fleet in Minnesota) it may still have only limited impact on the market. State legislation passed in 2010 requires that the federally-allowable content of ethanol in gasoline only be *mandated* in Minnesota if EPA approval applies to all vehicles, "irrespective of model year."⁴

For more information about E15, E20 and higher ethanol blends in Minnesota, please refer to MDA's *2011 E20 Report to the Legislature*.

Industry Standards

The American Society for Testing and Materials (ASTM) is an organization that establishes voluntary standards for fuels, vehicles and equipment for U.S. industries and policymakers. MDA provides input to several technical committees charged with maintaining and improving upon standards for the ethanol and biodiesel industries. For example, MDA staff serves on the ASTM D02 Petroleum Products and Lubricants Committee, which reviews and votes on ballots addressing a wide range of proposed changes to specifications for gasoline, diesel fuel, ethanol and biodiesel and other petroleum products. This year staff was also involved in the ASTM Collaboration Area WK24853, related to modifications of the biodiesel specification (D7651) with a focus on addressing characteristics and components of biodiesel that might contribute to the formation of particles in a biodiesel blend capable of clogging fuel filters in cold weather conditions. In addition, MDA staff served this year on ASTM Collaboration Area 24970, "New Standard for Blending Mid Level Ethanol Fuel Blends," formed to provide technical support to a segment of the industry interested in offering additional ethanol/gasoline blends beyond E10 and E85 for use in flexible fuel vehicles.

MDA also has staff serving on the Renewable Fuels Association Technical Committee, which develops industry standards in coordination with ASTM by providing technical industry data regarding the production, blending, distribution and performance of ethanol fuels. Finally, staff participates in the National Biodiesel Board's Annual Invitational Technical Workshop, a conference for technical staff across the country to share industry knowledge and developments.

Federal Incentives

This report focuses on federal funding opportunities from the American Recovery and Reinvestment Act of 2009 and the U.S. Departments of Agriculture and Energy, as the vast majority of funds for biofuels and bioenergy have emerged from these sources.

⁴ Laws for Minnesota 2010, Ch. 333, Section 19, subd. 2a.

American Recovery and Reinvestment Act (“Stimulus”) Funding

On February 17, 2009, President Obama signed into law the American Recovery and Reinvestment Act (ARRA). ARRA featured a number of energy provisions that provided more than \$42 billion in appropriations for energy programs and \$21 billion in energy tax incentives, primarily for energy efficiency and renewable energy. Some energy-related ARRA funds were distributed directly to states, primarily by formula; other funds were available as competitive federal grants and funding opportunities.

Funding to States

ARRA provided more than \$11 billion in energy-related grants for state and local governments through three U.S. Department of Energy (DOE) programs—the Weatherization Assistance Program (provides energy efficiency services to low-income households), the State Energy Program (provides states with discretionary funding that can be used for various energy efficiency and renewable energy purposes), and the Energy Efficiency and Conservation Block Grant Program (aims to help reduce energy use and greenhouse gas emissions).

In May 2009, the Minnesota Legislature passed, and Governor Pawlenty signed, legislation that designated Minnesota’s share of the ARRA energy dollars into various programs for weatherization, energy efficiency, renewable energy, commercial and industrial sector energy, and training and workforce development.⁵ By law, the Minnesota Office of Energy Security (OES) is responsible for administering Minnesota’s energy-related ARRA funds (MDA was not designated as the administrator of energy-related ARRA funds in state legislation).⁶ As of October 2010, OES had applied for and received over \$200 million in DOE funds for state governments and expended approximately \$80 million, or about 40 percent of total funds received, to various projects across the state.⁷ The majority of funds (nearly two-thirds) were allocated to the Weatherization Assistance Program.

Federal regulations have in some cases hindered OES’s implementation of certain energy-related programs under ARRA, including those targeting renewable energy projects. The National Environmental Policy Act (NEPA) requires DOE to assess the potential environmental impact of activities receiving federal funding. DOE can exclude certain broad categories from NEPA that are unlikely to have an adverse environmental impact. Activities that are not excluded cannot proceed without further review and potential environmental assessments, which can significantly delay projects. DOE classified numerous categories of activities in OES’s ARRA plans as exempt from NEPA—such as residential energy efficiency and workforce development—but prohibited implementation of renewable energy programs without additional information. Based on DOE guidance and negotiations, OES ultimately obtained exclusions under the renewable energy program for the installation of small renewable energy sources for buildings or facilities, photovoltaics, solar thermal hot water, wind turbines and ground-source heat pumps.

Use of State Energy Program funds—received by all states via formula disbursements from ARRA—is at the discretion of individual states. Not all states require legislative authorization to use such federal disbursements; for others authorization may include some directives such as reporting, or it may be quite prescriptive. Minnesota’s legislation for State Energy Program funds was very specific and sought to follow the federal legislative intent of ARRA by targeting near-term, shovel-ready projects for funding.⁸

⁵ S.F. 657/ Laws of Minnesota for 2009., Chapter 138, Article 5.

⁶ S.F. 657/ Laws of Minnesota for 2009, Chapter 138, Article 5.

⁷ With the exception of the Save Energy Now grant program, all awards are DOE formula grants.

⁸ Laws of Minnesota for 2009, Chapter 138.

The legislation channeled funds for renewable energy toward renewable electric generation and geothermal facility rebates, solar rebates and the solar cities program, renewable energy grants for school districts and local governments, and emerging renewable industries (to promote Minnesota's manufacturing base for renewable energy). According to officials at OES, Minnesota was one of the first states to get an ARRA-funded project underway within 180 days of legislation being passed.

Other states provided different legislative guidance for use of ARRA funds. For instance, Wisconsin's \$55 million in State Energy Program funds targeted low-interest loans to businesses promoting major renewable energy production projects; the manufacture of clean energy products; advanced manufacturing of clean energy components; retooling to provide component parts and other critical needs for a successful, totally integrated supply chain; and improving industrial users' competitiveness through energy efficiency and renewable energy deployment. As of August 2010, \$43 million had been awarded to various projects including ethanol and biodiesel plants. In September 2010, Ohio offered \$8 million of its \$96 million energy-related ARRA funds through the "Advancing Biofuels Beyond the Basics" program to boost manufacturers by subsidizing ethanol and biodiesel refining equipment purchases.

In September 2010, DOE sent a letter to state energy offices encouraging use of remaining ARRA State Energy Program and Energy Efficiency & Conservation Block Grant funds for new or existing renewable fuel infrastructure programs. DOE also developed a guidance document for successful deployment and announced partnership with USDA local offices and staff in designing and implementing this effort. According to OES staff, though, Minnesota's guiding legislation for use of ARRA funds does not provide the agency with the ability to direct any of these funds to blender pump/infrastructure projects.

Other ARRA Funding

In addition to funding provided to and disseminated by states, ARRA established several other energy programs administered at the federal level. The majority of these energy-related programs were administered through the U.S. Departments of Agriculture and Energy, discussed in subsequent sections of this report. The U.S. Department of Treasury was also given jurisdiction over two new programs—grants in lieu of investment tax credits, and advanced manufacturing tax credits—as discussed below.

U.S. Treasury 1603 Grants

ARRA created a renewable energy grant program that provides a cash grant in lieu of the federal business energy investment tax credit (ITC). Grants are available to eligible properties that include solar; fuel cells; small wind turbines; facilities that produce electricity from wind, closed- or open-loop biomass, geothermal, landfill gas, trash, qualified hydropower, and marine and hydrokinetic renewable energy facilities; geothermal heat pumps; micro-turbines; and combined heat and power facilities.⁹ Facilities must be placed in service in 2009 or 2010, or by the specified credit termination date if construction began in 2009 or 2010.¹⁰ Of the more than \$5 billion awarded to projects across the nation, Minnesota received nine payments totaling \$29.1 million for renewable energy generation from solar and wind facility projects.

Advanced Manufacturing Tax Credits

⁹ Definitions of eligible property types and renewable technologies can be found in the U.S. Code, Title 26, § 45 and § 48.

¹⁰ Credit termination date of January 1, 2013, for wind; January 1, 2014, for closed-loop biomass, open-loop biomass, landfill gas, trash, qualified hydropower, marine and hydrokinetic; January 1, 2017, for fuel cells, small wind, solar, geothermal, micro-turbines, CHP and geothermal heat pumps.

ARRA also authorized Treasury to award \$2.3 billion in tax credits for 30 percent of qualified investments in advanced energy projects to support new, expanded, or re-equipped domestic manufacturing facilities. Eligible facilities include those that support technologies focused on renewable energy, energy storage, advanced transmission, renewable fuel refining or blending, energy conservation (i.e., smart grid), plug-in electric vehicles and components, carbon capture and sequestration and others that reduce greenhouse gas emissions. Applications for credits were received between August and October of 2009, but credits will be allocated until program funding is exhausted. In April 2010, President Obama announced 183 projects that were selected for the tax credit, including a project in Faribault, Minnesota for approximately \$1.3 million in tax credits to re-equip a manufacturing facility for the production of rooftop air-conditioning systems.

U.S. Department of Agriculture Farm Bill and Other Programs

The Food, Conservation and Energy Act of 2008 (“Farm Bill”) allocates funding for various energy programs under Title IX (Energy), as well as in Title XV (Trade and Tax Provisions), for the four-year period from 2009 through 2012 as summarized in Figure 1.

Figure 1: Energy Provisions in the 2008 Farm Bill

Section Number	Name	Summary	4-year Mandatory (\$M)	4-year Discretionary (\$M)
Title IX – Energy Provisions				
9002	Biobased Markets/ “BioPreferred” Program	Federal preference for procurement of biobased products; biobased products labeling program.	\$9	\$8
9003	Biorefinery Assistance	Loan guarantees to produce advanced biofuels.	\$320	\$600
9004	Repowering Assistance	Support for existing biorefineries to install new energy systems for biomass heat and power.	\$35	\$60
9005	Advanced Biofuel Payment Program	Payments for next generation biofuel production.	\$300	\$100
9006	Biodiesel Fuel Education Program	Education and outreach on biodiesel use.	\$5 ¹	\$0
9007	Rural Energy for America Program	Grants and loan guarantees for energy efficiency and renewable energy. Includes support for feasibility studies and technical assistance.	\$255	\$100
9008	Biomass Research & Development	Advanced research to improve bioenergy.	\$118	\$140
9009	Rural Self-Sufficiency Initiative	Cost-share grants for rural communities to develop and implement energy self-sufficiency initiatives.	\$0	\$20
9010	Feedstock Flexibility Program	Sugar import management program.	SSAN ²	\$0
9011	Biomass Crop Assistance Program	Assistance to stimulate energy crop plantings.	SSAN \$70 (est)	\$0
9012	Forest Biomass for Energy	Research on use of low-value forest biomass.	\$0	\$60
9013	Community Wood Energy Program	Grants for rural communities to install wood energy systems in community facilities.	\$0	\$20
	Biofuels Infrastructure Study	Scientific study of infrastructure needs associated with production and use of biofuels.	\$0	\$0
	Renewable Fertilizer Study	Study on potential to produce fertilizer from renewable energy.	\$0	\$1
TOTAL			\$1,112	\$1,109
Title XV – Trade and Tax Provisions				
15321	Cellulosic Biofuel Production Credit	\$1.01 per gallon income tax credit to producer.	n/a	n/a
15322	Comprehensive Study of Biofuels	USDA/DOE/EPA/NAS scientific study on current production, maximum capacity, domestic impacts and corn ethanol plant conversion potential.	n/a	n/a
15331	Modification of Alcohol Credit	Reduction in Volumetric Ethanol Excise Tax Credit (“blenders credit”) from 51 cents to 45	n/a	n/a

1 Funding for 5-year period from FY08-12.

2 Such Sums as Necessary (mandatory funding, amount not specified)

The U.S. Department of Agriculture (USDA) administers Farm Bill programs. USDA has announced funding and made awards under many of the energy provisions in the Farm Bill for fiscal years (FY) 2009 and 2010. MDA has engaged in efforts to target these opportunities for Minnesota through frequent contact with USDA Rural Development on Farm Bill program details and deadlines, dissemination of relevant information to clients and stakeholders, and input into rulemaking for various programs. MDA has also assisted a number of companies applying for USDA funding opportunities through input into application materials and letters of support. In addition, MDA recently formed an internal Farm Bill Team that meets approximately every other month to discuss current Farm Bill issues and opportunities and ensure departmental involvement in and knowledge of relevant programs. Finally, MDA staff serves on the Midwest Governor's Association Farm Bill Task Force and are working to provide input on the 2012 Farm Bill energy title. Minnesota entities have applied for and received funding under a number of energy-related Farm Bill programs; the sections that follow describe these developments as well as MDA's involvement.¹¹

Biorefinery Assistance (Section 9003)

The Biorefinery Assistance Program provides loan guarantees of up to \$250 million for the development, construction, and retrofitting of commercial-scale biorefineries. USDA announced FY09 funding for this program in November 2008, with applications for first-round funding due in December and second-round funding due in April 2009. One of Minnesota's biodiesel plants (SoyMor) was awarded a \$25 million loan under FY09 funding to diversify its operations and significantly expand production of advanced biofuels.

In May 2010, USDA announced FY10 funding as well as additional funding available from FY09, with proposals due throughout the summer of 2010. Awards for these funds have not yet been announced. On October 21, 2010, Secretary Tom Vilsack called on USDA to announce within 60 days additional funding under this program for the construction (commencing in 2011) of a biorefinery or bioenergy plant in each of five regions serviced by USDA regional Biomass Research Centers.¹²

Repowering Assistance (Section 9004)

Under the Repowering Assistance Program, USDA will provide payments of up to \$5 million or 50 percent of project costs (whichever is less) to rural biorefineries in existence before July 18, 2009 that replace fossil energy with biomass for heat and power. Funding for the program was announced in June 2009 with proposals due in November. Two Minnesota entities applied for FY09 Repowering Assistance funds, but at the time of this report, USDA had only announced one recipient of the program to a producer in Iowa. USDA anticipates making more FY09 awards in the future. USDA also announced the availability of additional FY09 funding and FY10 funding with proposals due in May and July 2010, respectively.

Advanced Biofuel Payment Program (Section 9005)

¹¹ Some Farm Bill programs are not discussed in the subsequent sections either because USDA has not issued funding opportunities for those programs (in some cases, because the program only has discretionary funding, not mandatory) or because the program does not represent a relevant opportunity for Minnesota entities.

¹² These centers were established by recommendations in the President's Biofuels Interagency Working Group report to develop nonfood biomass feedstocks in collaboration with USDA's Agricultural Research Service and the U.S. Forest Service.

The Advanced Biofuel Payment Program makes payments to eligible producers of advanced biofuels (biofuels produced from renewable biomass, excluding corn kernel starch). For FY09, \$30 million was available for the program; individual payment amounts are dependent on the number of eligible producers and the amount produced by each. FY09 funding was announced in June 2009. Seven Minnesota producers were eligible for payments totaling just over \$1 million in 2009, including two ethanol plants, two biodiesel plants, two anaerobic digestion projects, and one company producing combined heat and power.

USDA only paid out about half of FY09 funds and therefore announced the availability of additional FY09 funding, along with new FY10 funds, in 2010. However, USDA proposed changes to the program rules to set aside 25 percent of funding for non-rural, non-citizen owned entities, which has caused program delays. In October 2010, Secretary Vilsack announced that up to \$281.5 million remains for this program and directed that work on the final rule be completed by the end of the year to make funds available.

Rural Energy for America Program (Section 9007)

The Rural Energy for America Program (REAP) provides grants for energy audits and renewable energy development assistance. It also provides funds to agricultural producers and rural small businesses to purchase and install renewable energy systems, make energy efficiency improvements or conduct feasibility studies. Grants can be up to 25 percent of total eligible project costs, limited to \$500,000 for renewable energy systems, \$250,000 for energy efficiency improvements, \$100,000 for energy audits and \$50,000 for feasibility studies. Loans are for up to 75 percent of project costs with a maximum of \$25 million.

In 2009, 159 projects in Minnesota were funded through REAP with approximately \$3.8 million in grant funds and \$2.6 million in loans. The majority of funds were provided to grain dryer energy efficiency upgrades; at least one award went to a feasibility study at one of the state's ethanol plants. In August 2010, USDA announced an additional \$23.4 million in REAP awards, including \$2.4 million to 21 projects in Minnesota (all to replacing inefficient grain dryers, with the exception of one wind turbine installation). The application window for FY10 funding for renewable energy and energy efficiency systems closed on June 30, 2010 and for energy audits on July 26, 2010; applications for FY10 feasibility studies were due October 5, 2010. In November, USDA announced an additional \$30 million in FY10 funding to 516 energy efficiency and renewable energy projects, including more than 160 projects in Minnesota.

USDA Rural Development staff noted recent a shift in Minnesota's REAP award trends. Historically, Minnesota received fewer numbers of awards but more total funding than other states, but this trend has reversed. USDA staff attributed this to a change in legislation that used to require USDA to allocate a certain amount of REAP awards among each category of renewable energy and energy efficiency projects (i.e., wind, solar, efficiency upgrades, etc.); the legislation no longer carries this requirement. Thus, Minnesota used to receive more awards for a few large wind projects, but now smaller projects such as grain dryer efficiency upgrades score higher in grant reviews. As such, more projects in Minnesota are awarded REAP grants, but the total dollar amount received has decreased.

Biomass Research and Development Program (Section 9008)

The USDA National Institute of Food and Agriculture and the U.S. Department of Energy (DOE) Office of Biomass Programs jointly administer the Biomass Research and Development Initiative (BRDI). The BRDI program provides grants to eligible entities to research, develop, and demonstrate biomass projects in three main technical areas: feedstocks development, biofuels and biobased products development, and biofuels development analysis.

USDA and DOE issued a joint solicitation for FY09 funding in January 2009. According to DOE staff, 12 Minnesota entities applied for funding under this program; the University of Minnesota received \$2.7 million (out of \$24.4 million total) to assess the environmental sustainability and capacity of forest-based biofuel feedstocks within the Lake States region.

A solicitation for FY10 funding was announced in May of 2010 with full applications due in November 2010. MDA was involved, along with other state agencies, in reviewing and providing comments on one pre-application for the BRDI program. In September 2010 the applicant was invited by USDA to submit a full application; MDA staff was involved in reviewing this as well. At the time of this report USDA had not made a final decision on FY10 awards.

Biomass Crop Assistance Program (Section 9012)

The Biomass Crop Assistance Program (BCAP) is designed to 1) provide matching payments to agricultural and forest landowners for the collection, harvest, storage and transport (CHST) of biomass materials to biomass conversion facilities, and 2) to support the establishment and production of dedicated energy crops. In May 2009, USDA requested MDA's assistance during the rulemaking process for BCAP. MDA convened a meeting with state agency personnel and other relevant stakeholders as well as site visits to sample bioenergy facilities in Minnesota to address USDA's questions regarding the program.

The CHST portion of the BCAP program was implemented in June 2009. By May 2010, ten facilities in Minnesota had been selected as Biomass Conversion Facilities and contracts were signed with 72 entities for the delivery of biomass materials to those facilities; USDA issued over \$4 million (out of about \$225 million nationally) in matching payments to these Minnesota entities. In February 2010, USDA stopped accepting applications and issuing payments due to an unexpectedly high number of contracts for woody biomass, which drove up prices and disrupted forest products industries.

In October 2010, USDA issued the final rule for the BCAP program, which made changes to the CHST portion of the program and implemented the second portion for dedicated energy crops. MDA worked with the Minnesota Department of Natural Resources (DNR) to submit a comment letter to USDA for consideration in the final rulemaking process. The final rule incorporated changes addressing some agency concerns.

Tax Provisions

Ethanol blenders currently receive a tax credit of 45 cents per gallon through 2010 and cellulosic ethanol producers received a credit of \$1.01 per gallon through 2012. Until January 1, 2010, all biodiesel producers earned a credit of \$1.00 per gallon and small producers earned an additional 10 cents per gallon, but these credits have expired.

Section 15331 of the Farm Bill reduced the previous VEETC from 51 cents per gallon to 45 cents per gallon. Ongoing debate in Washington, D.C. is weighing whether to let that tax credit expire, to further reduce it, to extend the credit for various lengths of time, or to implement some combination of

strategies. Some ethanol industry representatives are encouraging Congress to reallocate tax credit funds to ethanol infrastructure development. Recent developments suggest that Congress may extend the VEETC for one to two years. Bills under consideration also include language to extend the cellulosic ethanol credit as well as credits for biodiesel producers.

The biofuels industry has seen first-hand the importance of tax credits for sustenance and growth, as evidenced by the hardship facing the biodiesel industry since its tax credit expired last year. MDA has consistently voiced its support in favor of keeping tax credits for biofuels in place through letters to Minnesota's Congressional delegation and other outreach efforts.

Other Programs

In addition to programs under the 2008 Farm Bill energy and tax titles, USDA has provided recent funding for bioenergy through various other channels as described below.

AFRI-Sustainable Bioenergy Program

Section 7406 of the 2008 Farm Bill established the Agriculture and Food Research Initiative (AFRI). In 2010 AFRI announced the Sustainable Bioenergy Program for grants targeting the development of regional systems for the sustainable production of dedicated energy crops that can serve as feedstocks for advanced biofuels and other bioenergy/biobased products. The program favors proposals that employ a systems-oriented approach linking feedstock development, production, logistics, conversion and markets.

FY10 funding for the program was announced in March and proposals were due in September of 2010. MDA provided letters of support to two entities that applied for funding; award announcements are still pending.

Biomass and Wood-to-Energy Projects

This program, administered jointly by DOE and USDA/U.S. Forest Service, provided ARRA funds for various projects using woody and other biomass for energy production. In June 2009, the Bois Forte Development Corporation in Minnesota received \$250,000 out of the total \$51.8 million in grants to purchase chippers and a grinder for a biomass facility. Several other states—including Arizona, California, Colorado, Idaho, Kentucky, Nevada, Oregon and Washington—received multiple grants under this program.

Biological and Environmental Research

This program, administered jointly by DOE and USDA's National Institute of Food and Agriculture, promotes fundamental research in biomass genomics to facilitate and accelerate the use of woody plant materials for bioenergy and biofuel. In 2009, the program provided \$6.3 million to nine biobased-fuel research projects (\$4 million for four projects under DOE and \$2.3 million for three projects under USDA); in 2010, the program provided \$8.9 million to nine projects (\$6.9 million for seven projects under DOE and \$2 million for two projects under USDA). MDA staff is not aware of any Minnesota applicants for this program.

Woody Biomass Utilization Grant Program

Administered by the U.S. Forest Service, this program is intended to improve forest restoration activities by using and creating markets for small-diameter material and low-valued trees removed from forest

restoration activities. These funds are targeted to help communities, entrepreneurs, and others turn residues from forest restoration activities into marketable forest. The Forest Service received 109 applications and awarded \$4.2 million in grants in 2009 to projects in 17 projects in 9 states—none from Minnesota. MDA staff is not aware of any Minnesota applicants for this program.

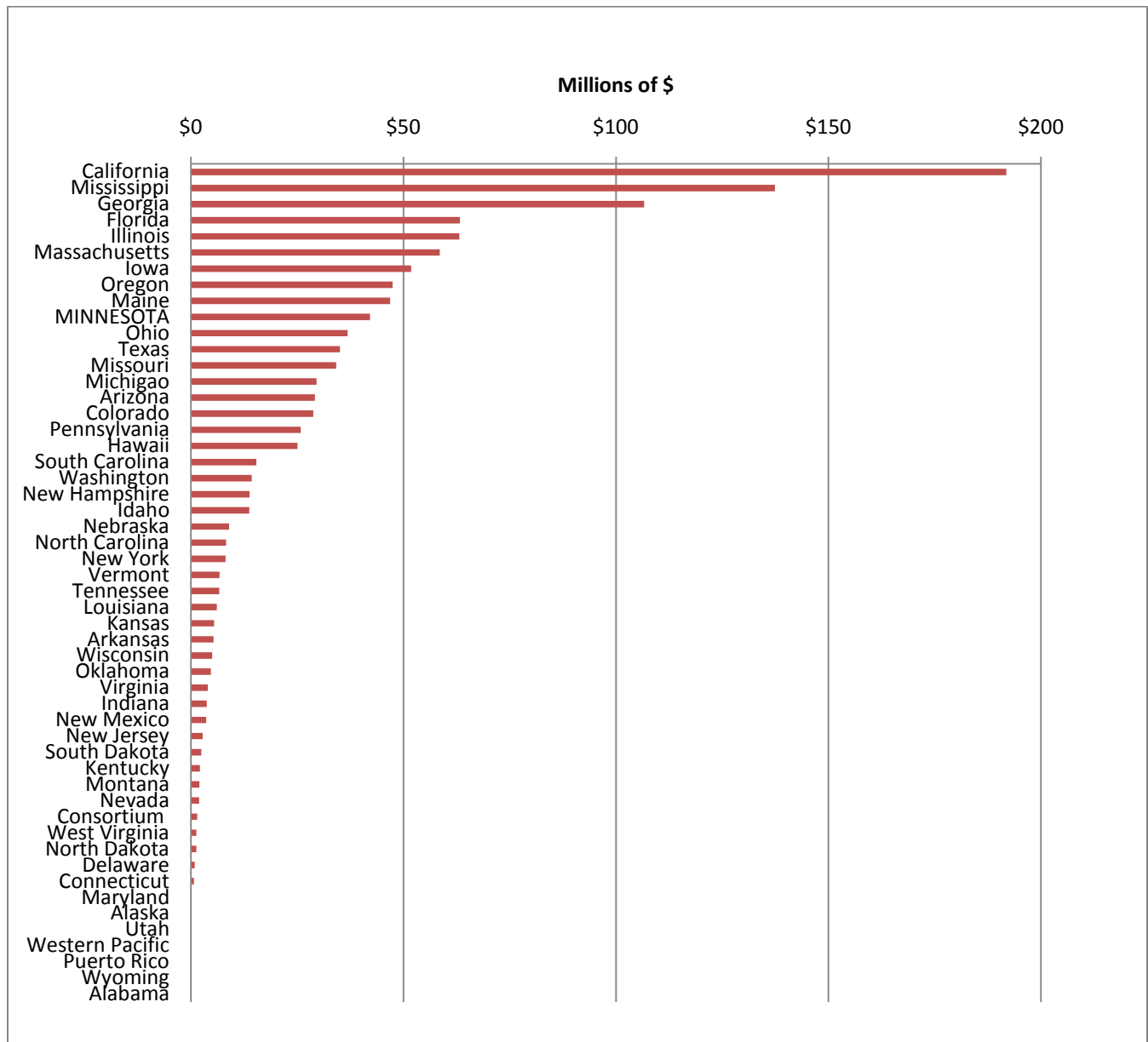
Blender Pumps

In October 2010, Secretary Vilsack instructed USDA Rural Development officials to provide financial assistance, using existing resources, for resources and matching funds to help install 10,000 blender pumps and storage systems over the next 5 years. This program is yet to be implemented; thus, the impact on Minnesota is unknown.

Summary of USDA Bioenergy Awards to Minnesota

As demonstrated by Figure 2 below, Minnesota is one of the top 10 recipients of USDA grants and loans in terms of total dollars awarded—more than \$42 million from January of 2009 through September of 2010. Although awards to Minnesota only represent about 3.5 percent of total funds awarded, funds were widely dispersed among states such that even the top recipient (California) only received about 15 percent of all funds.

Figure 2. USDA Bioenergy Grant and Loan Awards to States, Jan. 2009-Sept. 2010¹³

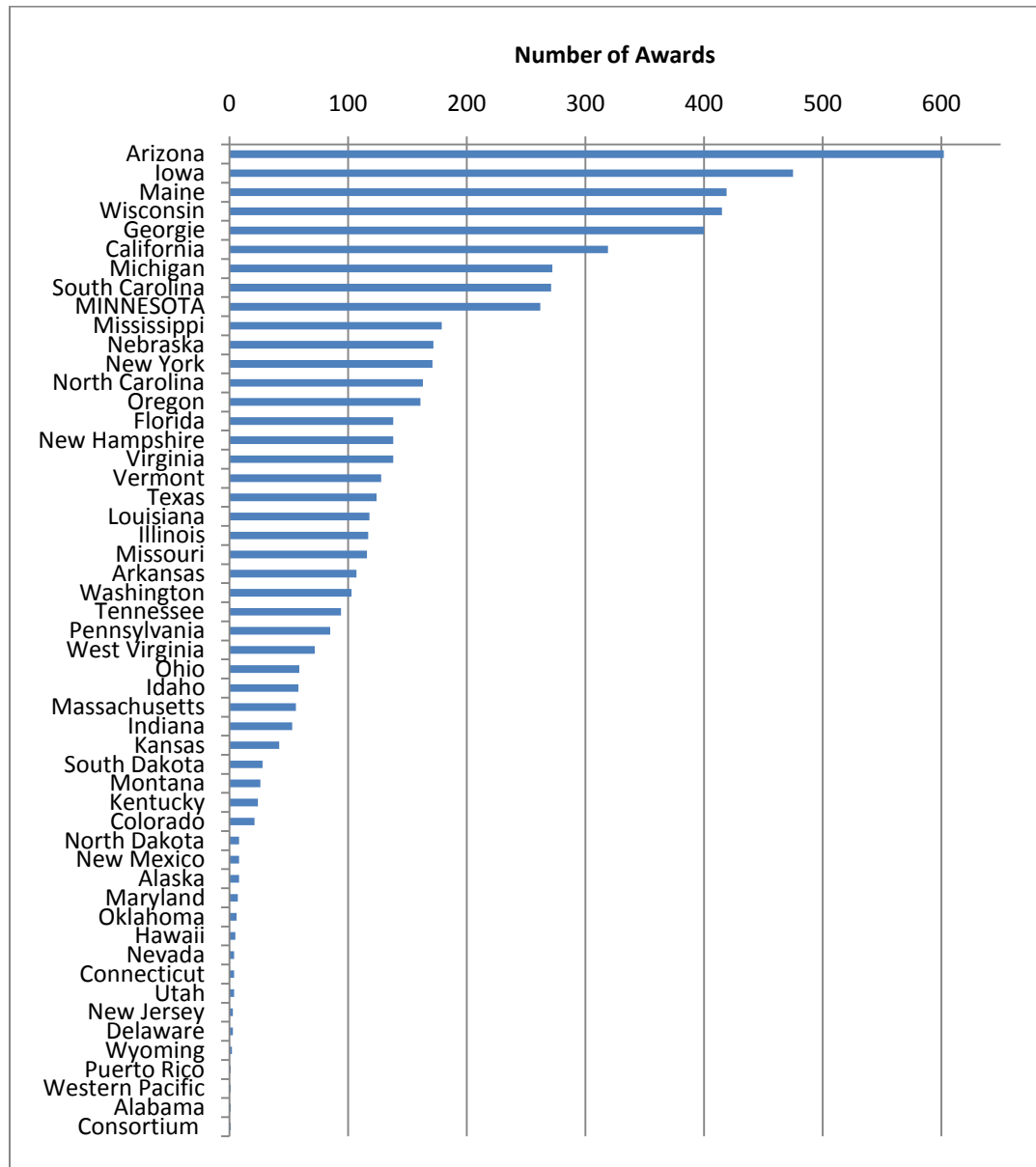


Source: Minnesota Department of Agriculture, based on USDA press releases from January 2009 to September 2010.

Minnesota is also a top recipient on a per-project basis. Figure 3 shows that Minnesota ranks ninth in the number of projects funded from January 2009 to September 2010, with 262 projects funded out of a total of 6,162 (about 4 percent). Many of the top 10 recipients on a per-dollar basis are also in the top 10 on a per-project basis, but in a different order. One state to note is Wisconsin, which received the 4th highest number of grants (415) but ranks 31st in total dollars awarded (nearly \$5 million). On the flip side, Massachusetts ranked 6th for total dollars awarded (\$58.5 million) but 30th for number of projects (56).

¹³ Figure 2 represents only those awards announced between January 2009 and September 2010; awards announced outside of this timeframe may be discussed in this report but not represented here.

Figure 3. USDA Bioenergy Grant and Loan Awards to States, Jan. 2009-Sept 2010¹⁴



Source: Minnesota Department of Agriculture, based on USDA press releases from Jan. 2009 to Sept. 2010.

U.S. Department of Energy Programs

Recently, DOE has provided a number of grant and loan opportunities for bioenergy projects—such as the expanded Loan Guarantee Program for innovative energy efficiency, renewable energy, and advanced transmission and distribution technologies; and the Advanced Integrated Biorefinery Program for the construction and operation of advanced biofuels facilities.

MDA staff, along with other state agencies, has helped potential applicants in Minnesota to identify available DOE funding, and in some cases, has reviewed proposals for accuracy and completeness.

¹⁴ Figure 3 represents only those awards announced between January 2009 and September 2010; awards announced outside of this timeframe are discussed in this report but are not be represented here.

MDA has also submitted letters in support of various DOE proposals. These efforts and Minnesota's achievements securing DOE funds are described in the sections that follow.

Advanced Integrated Biorefineries

This program was designed to accelerate the construction and operation of pilot, demonstration, and commercial scale biofuel facilities. Grants were funded through the 2009 stimulus package (ARRA). DOE announced the opportunity in May 2009 and made awards totaling approximately \$560 million to 19 projects in 15 states in December. According to DOE staff, nine Minnesota entities applied for program funding; MDA provided a letter of support to one applicant and input to others as requested.

Advanced Biofuels Research/Consortia

In January 2010 DOE awarded approximately \$77.8 million to two large consortia representing a variety of institutions to conduct algae-based and advanced biofuels research. Minnesota entities are not involved in either consortium. MDA staff provided information on this program to interested parties as requested.

Biomass/Biofuel Development Grants – Feedstock Logistics Systems

Five projects were selected in August 2009 to receive a total of \$21 million for developing supply systems to handle and deliver high tonnage biomass feedstocks for cellulosic biofuels production. MDA staff received anecdotal evidence that at least one Minnesota entity applied to this opportunity.

Biomass and Wood-to-Energy Projects

This program is administered jointly with USDA and was discussed in the previous section on USDA opportunities.

ARPA-E

ARPA-E was established in 2009 to leverage resources supporting high-risk, transformational research that can bridge the gap from basic energy research and development/industrial innovation. Funding for the first three rounds of ARPA-E projects came from the 2009 stimulus package. The first funding announcement in May 2009 requested concept papers of transformational ideas spanning all aspects of energy science and technology. Approximately \$44.4 million in awards were announced the following October, including \$2.2 million to the University of Minnesota to study biomass energy through direct solar fuels. DOE issued two additional funding announcements in January and April 2010 focusing on a variety of topics including electrofuels, advanced carbon capture, and battery and grid storage. MDA staff, along with other state agencies, stays apprised of ARPA-E opportunities and disseminating the information to various clients.

Biomass Research and Development Initiative

This program is administered jointly with USDA and was discussed in the previous section on USDA opportunities.

Biomass Syngas Development Grants

One entity in Utah was selected in November 2009 to receive \$3.6 million to develop biomass syngas cleaning and conditioning technologies. MDA staff is not aware of any Minnesota applicants for this program.

Community Renewable Energy Development Grants

In January 2010 DOE awarded a total of \$18 million to four projects in California, Vermont and Wisconsin to install renewable energy systems in various communities. MDA staff is not aware of any Minnesota applicants for this program.

Energy Frontier Research Centers

DOE announced \$227 million in August 2010 to 46 “energy research centers” across the country (out of 260 total applicants). Awardees included universities, non-profits, private entities and federal labs; no Minnesota entities were chosen.

Ethanol Infrastructure Grants

In January 2010 DOE announced \$1.8 million in grants of \$200,000 each, funded through ARRA, to projects in nine states to expand ethanol blending infrastructure, such as blender pumps, at existing retail fueling locations. This opportunity recurs approximately once every two years through DOE’s Clean Cities program. The American Lung Association in Minnesota (ALAMN) applied for these funds in 2009; however, none were received. Feedback from DOE suggested that ALAMN’s proposal was not funded in part because Minnesota’s ethanol infrastructure is already well developed and the benefit may not be as significant as it could be in other states.

ALAMN also partnered with Clean Cities Coalitions in the eight-state upper Midwest region to apply for funding through the same program to conduct an educational campaign on blender pumps and ethanol blends, but ultimately did not receive funding for this proposal either. However, ALAMN received \$377,000 from DOE in 2009 to install a minimum of 15 sites for E85 dispensing and to conduct related marketing activities. These funds cannot be used for blender pumps or other multi-product fuel dispensers, and DOE has some input into the location and other details of installed pumps.

Landfill Gas-to-Energy

Two projects developed by New Jersey-based Ridgewood Renewable Power were awarded a total of \$25 million in November of 2009 to expand existing landfill gas-to-energy facilities in California and Rhode Island. MDA staff is not aware of any Minnesota applicants for this program.

Biological and Environmental Research

This program is administered jointly with USDA and was discussed in the previous section on USDA opportunities.

Clean Renewable Energy Bonds

The U.S. Department of Treasury announced allocation of more than \$2 billion in Clean Renewable Energy Bonds (CREBs) to a wide range of public power companies and cooperatives nationwide to help energy developers access lower cost credit and encourage clean renewable energy production. DOE awarded five cooperative electric recipients with \$63 million in bonding authority for biomass projects. MDA staff was not involved in any CREB projects or applications.

Loan Guarantee Program

The 2005 Energy Policy Act established the Loan Guarantee Program, authorizing DOE to make loans to qualified projects that reduce greenhouse gas emissions and accelerate the commercial use of new or improved energy technologies. DOE issued three solicitations from 2006 to 2008, with a focus on energy efficiency, renewable energy and advanced transmission and distribution technologies; nuclear facilities; and fossil energy and clean coal technologies. Although the solicitations drew extensive interest from hundreds of applicants, the application and review process was slow and DOE did not make any awards during that time.

In February 2009, ARRA expanded the Loan Guarantee Program by adding a focus on near-term, shovel-ready renewable energy, electric power transmission and leading-edge biofuels projects. Since then, DOE has issued additional solicitations focused on energy efficiency, renewable energy and advanced transmission and distribution technologies (August 2010); and manufacturing projects for commercial renewable energy systems and components (October 2010). In some cases DOE announced multiple rounds or extended the deadline of solicitations, particularly for renewable energy, to give applicants more opportunities and time to complete the process. In 2009 and 2010 DOE announced loan guarantee awards to a variety of projects including solar and wind energy projects, nuclear facilities, projects to improve grid transmission, and geothermal projects.¹⁵ To date, DOE has not provided loan guarantees for any biofuels projects.

To date, one company in Minnesota—SAGE Electrochromics, Inc.—has received a conditional commitment from DOE for a loan guarantee to support the construction and operation of a facility to produce an energy-saving window technology for commercial use; additional awards will likely be announced by DOE in the future.

Sustainable Bioenergy Feedstock Production

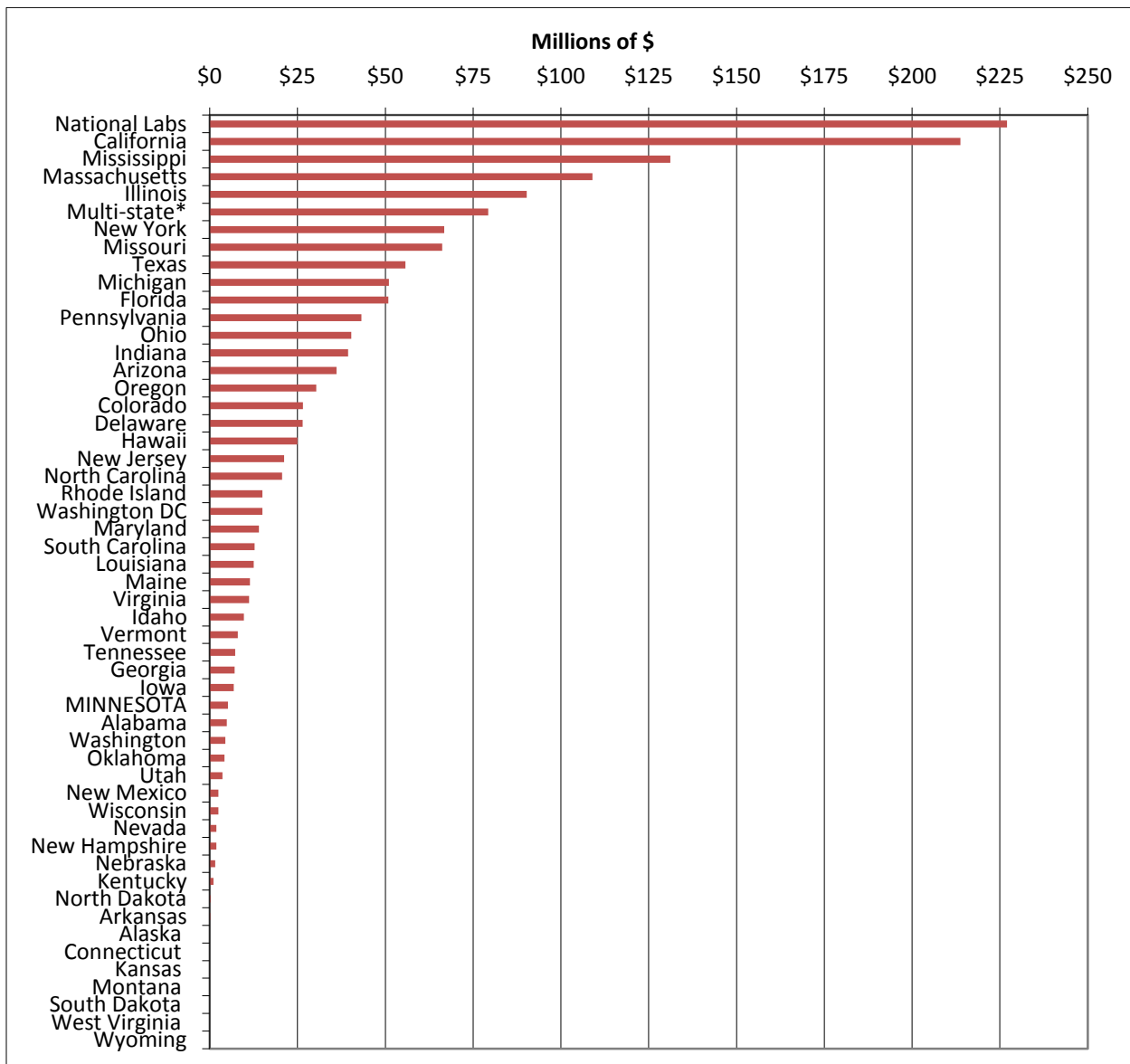
In March of 2009, DOE issued a funding opportunity to derive data on the sustainability of dedicated energy crop production systems at the watershed level for biofuels/bioenergy production. MDA staff was involved in conversations with other state agencies regarding several Minnesota entities that considered applying for this opportunity. DOE announced three awards in September 2010, including one for approximately \$800,000 to the University of Minnesota to analyze sustainability and environmental issues for bioenergy feedstock production in the Mississippi River watershed.

Summary of DOE Bioenergy Awards to Minnesota

According to data compiled by the Minnesota Office of Energy Security, DOE made awards through 12 different bioenergy programs in 2009, as shown in Figure 4.

¹⁵ See DOE's Loan Guarantee Program website for an updated list of projects: <http://www.lgprogram.energy.gov/>.

Figure 4. State Totals for Competitive DOE Bioenergy Grant Awards, Jan. 2009-Jan 2010¹⁶



Source: Minnesota Office of Energy Security - based on U.S. DOE press releases from January 2009 to January 2010. Presented to the Minnesota NextGen Energy Board on September 2, 2010. Multi-State partnerships include awards for Biomass R&D grant to "Consortium for Research on Renewable Materials," and for Advanced Biofuels Research grants to "National Advanced Biofuels Consortium" and "National Alliance for Advanced Biofuels and Bioproducts." Minnesota is not included in these multi-state projects.

As is evident, Minnesota received far less DOE energy-related funding overall than many other states: of the approximately \$1.6 billion awarded by DOE, Minnesota entities received approximately \$5.2 million, or less than 1 percent of the total. OES data specifies that Minnesota received funding from three of the 12 grant programs offered by DOE in 2009: Advanced Research Projects Agency-Energy

¹⁶ Figure 4 represents only those awards announced between January 2009 and January 2010; awards announced outside of this timeframe are discussed in this report but are not be represented here. In addition, Figure 4 only represents DOE grant awards; thus, other opportunities such as loans are not included.

(\$2.2 million), Biomass and Wood-to-Energy Projects (\$250,000) and the Biomass Research and Development Initiative (approximately \$2.7 million, as described above).

However, applicant “success rate” is difficult to determine because information on the number of applicants for each program is not widely available. For example, if only three applications were submitted by Minnesota entities to the programs described above, this would indicate a 100 percent success rate. On the other hand, if applications were submitted by at least one entity to all 12 programs available in 2009, the state would only have a success rate of 25 percent. USDA and OES staff were only able to obtain information on total applicants from Minnesota for two programs—the Biomass Research and Development Initiative and the Advanced Integrated Biorefineries Program—as noted in the above sections. According to DOE, applicant data for other programs and for all states has not been compiled and would require a large data request at a later date. It would be useful to know this information and to compare the relative success rate of Minnesota applicants to that of other states.

State and Local Opportunities

MDA has also worked to pursue opportunities at the state level for biofuels development—including incentives for infrastructure development, increasing state fleet use of renewable fuels and engaging in interagency efforts to advance Minnesota’s bioenergy interests.

Infrastructure Development

In 2007, the Minnesota Legislature established an E85 and biodiesel cost share grant program to assist retailers with the installation and conversion of ethanol and biodiesel dispensing equipment.¹⁷ The program, administered by the American Lung Association in Minnesota (ALAMN), was appropriated \$1.5 million in FY07 for E85 and biodiesel (B10-20) infrastructure with plans to double program funding in FY08. Because funds were not fully expended in FY07, the legislature ultimately only provided \$250,000 for the second year of the program, followed by an additional \$250,000 in FY09 specifically for ethanol blender pumps that dispense ethanol blends between E10 and E85.

Since the program’s inception, 78 sites have received grant funding and an additional 20 sites have secured agreements to complete projects in the near future. To date, \$1,476,889.32 of the \$1,550,000 available for E85 and biodiesel infrastructure has been spent or reserved through contracts with retailers. In addition, four sites have expressed their intent to apply for funding with expected project costs of \$60,000 in E85 pumps. Program grantees may receive a maximum award of \$15,000.

In 2010, the legislature cut \$450,000 from the renewable fuel infrastructure program—\$100,000 from blender pump funding and \$350,000 from E85 and biodiesel infrastructure funding. As of September 2010, approximately \$73,000 remained in the fund; however, all funds for blender pumps had been expended or contracted out and remaining funds are only available for E85 and biodiesel (B10-20) infrastructure.¹⁸ According to ALAMN, 75 percent of the applications they currently receive are for blender pumps, potentially indicating that retailers may have a greater need for infrastructure funding for intermediate ethanol and biodiesel blends in addition to E85 and B10-20.

¹⁷ Laws for Minnesota 2007, Ch. 57, Art. 2, Sec. 3, Subd. 6)

¹⁸ A retailer may also apply for this funding and receive a “prorated” amount for installing mid-level blend pumps, often at a lower rate than that received for only installing an E85 pump. The cost of the pump and related equipment are prorated based on the number of products it dispenses.

As mentioned earlier, ALAMN was also awarded funding from DOE for renewable infrastructure installation, but these funds are also only available for E85 pumps and will fund 15 installations over the next two years.

Flex Fuel Vehicles

Minnesota's SmartFleet Committee sets goals for reducing state government consumption of petroleum fuels for transportation.¹⁹ According to the Committee, state agencies have consistently increased their use of E85 in the state's approximately 2,500 flex-fuel vehicles. In 2009, state agencies bought almost 817,000 gallons of E85, compared to 97,000 gallons in 2005—a nearly tenfold increase. Gasoline purchases have declined nearly 10 percent over that period. During the first three quarters of calendar year 2010, E85 use reached nearly 725,000 gallons, with agencies combined using 17.5 percent E85 fuel and 82.5 percent petroleum-based gasoline in state vehicles.

Figure 5 details fuel use across state agencies for 2010. As is evident, MDA ranks second among agencies for use of E85 as a percentage of total fuel use, consuming 42,516 gallons of E85 in 2010 thus far (about 45 percent of total fuel consumption). Notably, the number one ranking agency—Higher Education—is relatively small and only consumed 588 gallons of E85 in 2010. The Department of Transportation is the largest state agency consumer of E85 based on total volume.

In October 2010, the Minnesota Department of Administration announced the “million gallon challenge” for agencies to purchase 1 million gallons of E85 in 2010. MDA worked with Administration in announcing this effort.

¹⁹ Executive Order 04-10.

Figure 5. Fuel Use by Minnesota State Agencies, 2010.

State of Minnesota
Calendar Year 2010 Fuel Data - Retail Purchases

Fleet Council - SmartFleet Committee January - September 2010

Governmental Unit	E85 Percentage	E85 Gallons	Gasoline Gallons	Diesel Gallons
Higher Education	82.0%	588	129	0
Agriculture	43.6%	42,516	55,040	885
Governor's Office	42.1%	823	1,131	0
Revenue	34.3%	4,816	9,215	79
Mediation Services	34.2%	1,675	3,216	12
Transportation	33.3%	319,102	640,211	957,154
Enterprise Technology	32.1%	1,394	2,945	42
Health	26.5%	19,240	53,300	327
DEED	26.4%	6,703	18,672	104
Corrections	24.9%	60,894	184,072	23,112
Commerce	21.3%	6,582	24,388	12,725
Pollution Control	20.2%	14,266	56,450	767
Education	15.5%	991	5,387	0
Other Governmental Units	15.3%	48,163	267,009	18,539
Labor and Industry	15.2%	8,044	44,708	43
Human Services	13.4%	49,051	315,757	10,683
Military Affairs	13.4%	822	5,323	0
Housing Finance	12.1%	456	3,323	0
Public Safety	10.5%	112,760	965,303	6,616
Iron Range Resources	5.2%	178	3,279	3,118
Administration	5.0%	1,028	19,345	3,765
Natural Resources	3.3%	24,582	722,855	191,479
Veterans Affairs	1.0%	155	15,032	7,342
Totals:	17.5%	724,827	3,416,090	1,236,792

Source: Minnesota Department of Administration, September 2010.

Interagency Efforts

MDA is engaged in interagency efforts to pursue opportunities for bioenergy in Minnesota. In particular, MDA staff serves on a legislatively-mandated initiative called the Green Enterprise Assistance (GEA)—an interagency team designed to help new bioenergy businesses navigate through programs, services, and state/federal agencies to identify needs and relevant resources for development. The GEA is facilitated by the Minnesota Department of Employment and Economic Development and comprised of representatives from the Minnesota Departments of Agriculture, Commerce (Office of Energy Security), Natural Resources, Transportation, the Minnesota Pollution Control Agency and Iron Range Resources. The team convenes on a monthly basis and as needed to discuss developments and meet with companies at various stages of product development. MDA has provided assistance to numerous bioenergy companies through GEA in the form of grant and loan information, funding application review and letters of support (as discussed throughout this report). Although in its infancy, the GEA is proving to be an essential coordination effort of benefit to both agency staff and the clients/stakeholders they serve.

Another interagency team, comprised of top-level management staff from eight different state agencies, meets bimonthly to discuss policy and other developments in the environment and energy arena.

Observations and Conclusions

Minnesota has consistently pursued federal opportunities for biofuels and often has been rewarded for its efforts. MDA has been actively engaged in disseminating program information to potential applicants and in some cases reviewing applications and/or providing letters of support. Minnesota has also engaged in work at the state-level to capitalize on opportunities that increase the production and use of biofuels.

Based on discussions with other state agency staff, stakeholders and industry representatives, MDA identified the following as potential assets in Minnesota's efforts to pursue funding and other opportunities:

- *State Agency Resources and Collaboration:* Minnesota state agencies are actively involved in tracking and disseminating information on opportunities to interested entities through regular updates/newsletters and timely responses to requests for information. Agency staff also provides entities with input on various aspects of funding applications such as budgets, work plans, etc. In addition, Minnesota's Green Enterprise Assistance (GEA) team provides a "one-stop-shop" resource for entities seeking input on proposed projects; it also streamlines the work of agency staff into a more efficient and effective process. The GEA represents a forward-thinking initiative for coordination among relevant agencies in Minnesota.
- *Research and Development:* Minnesota is home to several top-rated research institutions in the nation, particularly for renewable energy and technological development.
- *Industry and Policy Leadership:* Minnesota is a national leader in biofuels development, with strong industry representation and progressive policies for both current and future generation biofuels. Many states, as well as the federal government, have looked to Minnesota as an example in setting their own policies and goals.

Despite these strengths, however, evidence suggests Minnesota may have fallen behind other states in securing federal funding—particularly from DOE. MDA believes a number of factors may be affecting the success rate of Minnesota entities, as follows:

- *Availability of Capital:* The large capital investments needed to match federal funding may be a barrier to Minnesota companies, as a greater proportion of U.S. venture capital firms are located outside of the Midwest.
- *Program Requirements:* Requirements for certain federal funding programs have limited the success of many bioenergy entities (both in Minnesota and at the national level). For example, the DOE Integrated Biorefinery Program required a certain amount of pilot plant data, rendering some Minnesota projects operating at a smaller scale ineligible to apply. Many entities have also chided DOE's Loan Guarantee Program application process for being cumbersome and financially demanding. Several biotechnology groups at the federal level have urged President Obama to adjust the program to make it more accessible to biofuel and bioproduct companies. There is some indication that federal agencies may relax certain programmatic requirements to promote accelerated commercialization of advanced energy technologies.

- *Federal Agency Presence in Minnesota:* Federal agencies with a presence in Minnesota allow the state to foster valuable relationships with potentially positive impacts on funding awards. The USDA has several offices in Minnesota; DOE does not have a state presence. MDA maintains a good working relationship with USDA Rural Development staff in both St. Paul and other rural areas, allowing staff to communicate easily and efficiently about program requirements, application deadlines, eligibility issues, etc. MDA believes this relationship has allowed staff to provide more informed and up-to-date information to clients and stakeholders.
- *Technical Hub:* Federal awards seem to favor states that represent a “technical hub” of existing expertise, capabilities and infrastructure.

Based on these assets and barriers, Minnesota—through MDA and other relevant state agencies—could engage in the following actions to potentially strengthen the state’s capacity to pursue and obtain federal resources. In some cases, MDA is already working towards these goals, as noted:

- *Improve “technical hub” status* by marketing successful projects and partnerships through media resources, legislative/federal/Governor delegations, trade magazines, and technical staff/managers of parallel federal programs. MDA has already begun to engage in this work with DOE. In particular, DOE is building a website that will feature bioenergy “success stories” across various states. MDA has submitted several Minnesota examples to DOE; one has already been published on the site along with others developed by DOE staff.²⁰
- *Develop stronger relationships with other federal agencies*, such as DOE. MDA is working to establish a closer relationship with staff in DOE’s Biomass Program Office; DOE has expressed reciprocal interest in building ties and learning more about projects specific to Minnesota.
- *Strengthen applications for funding* by improving on completeness/compliance with program requirements, and scoring for technical/economic/market aspects. MDA and other state agency staff are working to further expertise in these areas and develop resources for Minnesota entities to help inform the process.
- *Continue to provide input into federal programs and policies* through comments and letters as appropriate that encourage reasonable requirements suited to Minnesota’s needs and strengths.

²⁰ See <http://www.energyempowers.gov/post/A-Biorefinery-goes-e2809cmode2809d-and-small.aspx>.