



# Renewable Electricity for Minnesota's Future

## Annual Report (August to December 2015)

Project Funding provided by customers of Xcel Energy through a grant from the Renewable Development Fund (RDF)

**INSTITUTE ON THE  
ENVIRONMENT**

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**UNIVERSITY OF MINNESOTA**  
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## EXECUTIVE SUMMARY

This annual report is submitted in compliance with the Article 7 of the Grant Contract Terms and Conditions as supplemented by Exhibit C (Reporting Requirements and Protocol) covering the project “Renewable Electricity for Minnesota’s Future,” supported by the customers of Xcel Energy through a grant from the Renewable Development Fund.

Covering the period August to December 2015, this Annual Report summarizes activities initiated and undertaken to lay the groundwork for the implementation of the above-mentioned university-wide research block grant. It enumerates actions taken immediately after the formal awarding of the Grant to the University through the Institute on the Environment, the preparation of the Request for Proposals (RFP), the framework for establishing an Advisory Board for the Project, and some updates on the initial responses to the RFP.

## Introduction

The University of Minnesota, through the Institute on the Environment (IonE), entered into an agreement with the Northern States Power Company (doing business as Xcel Energy in Minnesota), with respect to a research grant with a total amount of \$3 Million for a period of three years. The funding was allocated from the Higher Education block grant component of the Renewable Development Fund, supported by the ratepayer Xcel Energy's ratepayer and managed by the said utility company. Thus, pursuant to the conditions of the said agreement (Exhibit C, "Reporting Requirements and Protocol), the University provides this annual report to convey progress made to date in implementing the said research initiative.

The Project "Renewable Electricity for Minnesota's Future" aims to contribute in the strengthening and expansion of the renewable energy industry in Minnesota and at the same time, benefit current Xcel ratepayers now and in the future. IonE proposed to do achieve this goal by supporting university-based research that could produce innovations on renewable electricity that have high potential for approaching commercial viability.

The research initiative is open to proposals covering the following technology fields: 1) Wind-based Generation; 2) Hydropower Generation; 3) Photovoltaic Generation; 4) Alternative biofuels for electricity generation; 5) Power electronics, power systems, and transmission of electricity; 6) Thermal Electric Generation; and 7) Electric Energy Storage.

## Project Implementation: Inception Stage (August to September 2015)

The Project was awarded on April 24, 2015, but the subsequent compliance filing with respect to contract amendments concerning royalties resulted to an adjustment of the contract effective date or project start date to August 20, 2015.

A Post-Award Meeting on September 15, 2015 was convened between the Institute on the Environment (IonE), represented by managing director and chief operating officer, Lewis Gilbert and graduate research assistant, Maria Victoria Punay, the University of Minnesota's Sponsored Projects Administration (SPA) representatives, Laura Williams and Bridget Foss, and Xcel Energy RDF grant administrator, Mark Ritter. Through the Meeting, the parties went through the project reporting requirements, limitations on the usage of funding, and other contractual obligations.

In the succeeding weeks, the University's SPA conducted the necessary legal and administrative review of the contract governing the project and on October 15, 2015, released a Notice of Grant Award to IonE, signaling the latter to formally commence project implementation.

### Summary of Project Activities (October to December 2015)

	October				November				December			
Week	1	2	3	4	1	2	3	4	1	2	3	4
1. Preparation and Release of Request for Proposals (RFP)												
2. Stakeholder Mapping for Advisory Board Composition												
3. Receipt and Review of Letters of Intent												

#### 1. Preparation and Release of Request for Proposals (RFP)

In consultation with the College of Science and Engineering, a Request for Proposals (RFP) was developed and distributed in October to various colleges and departments in the Duluth, Morris, and Twin Cities campuses of the University of Minnesota. This included specialized research centers such as the Natural Resources Research Institute (NRRI), the Energy Transition Lab (ETL), West Central Research and Outreach Center, and the Saint Anthony Falls Laboratory.

Apart from publishing the RFP on IonE's website, the document was likewise published on the University's database of funding opportunities for research advancement, hosted by the Office of the Vice-President for Research.

The RFP was released on October 23, 2015 and prospective principal investigators were requested to submit their Letters of Intent (LOI) to submit research proposals on or before November 23, 2015.

#### 2. Stakeholder Mapping for Advisory Board Composition

As IonE identified in its grant proposal, an Advisory Board for the Renewable Electricity for MN's Future will be convened and the members of which will include a full breadth of non-University stakeholders in the state's renewable electricity.

The Advisory Board is tasked help advise on the strategic direction of the program and assess the research portfolio it supports. Through the members and the organizations they represent, IonE aims to connect the University with a wide range of stakeholders across the state to convey updates and progress of the research initiatives on renewable electricity. The Board will be likewise called upon to review the progress of the projects based on their respective year-to-year milestones and make recommendations regarding funding renewal.

IonE conducted an environmental scan of government agencies, non-profit organizations, and private companies in the renewable energy industry to identify the possible stakeholders of the project.

For the government agencies, the scan was straightforward since the concerned offices were readily identifiable based on their mandates: Public Utilities Commission, Department of Commerce, and Environmental Quality Board. These agencies likewise share a crosscutting mandate of contributing to climate change mitigation.

For the non-profit organizations scan, IonE used GuideStar ([www.guidestar.org](http://www.guidestar.org)) to generate a list of non-profits whose work aligns with the general goals of the Renewable Development Fund. The list was narrowed down to fourteen organizations, of which four were government agencies, six were non-profits, and four represented the private industry.

### 3. Receipt and Review of Letters of Intent

A total of twenty-three letters of intent were received from scientists based in the Duluth, Morris, and Twin Cities campuses. The proposed research involved collaboration between campuses and interdisciplinary teams from the fields of Science and Engineering; Food, Agricultural, and Natural Resource Sciences; Law; Strategic Management and Entrepreneurship; and Public Affairs.

The proposed projects cover the following technology fields as their main focus:

Technology Field:	Number of LOIs:	Amount Requested
Electric Energy Storage	4	2,991,748.00
Photovoltaic Generation	7	5,164,941.00
Wind-Based Generation	3	2,250,000.00
Alternative Biofuel Research	5	3,749,257.00
Hydropower Generation	1	750,000.00
Thermal Generation Research	1	750,000.00
Power Electronics, Power Systems, and Transmission of Electricity	2	1,350,000.00
<b>TOTAL</b>	<b>23</b>	<b>17,005,946.00</b>

All proposals were generally in line with the aims of the Renewable Development Fund and of the university-wide grant program. However, IonE emphasized to all prospective principal investigators the need to refine the technical component of their respective electric generation research as the rubric for proposal selection emphasizes innovation in the technology field, technical and operational feasibility.

## **Conclusion: Next Steps Moving Forward**

IonE is currently finalizing the composition of the Advisory Board, awaiting confirmation from two of the fourteen organizations invited. The first meeting is scheduled to take place on February 25, 2016.

Meanwhile, a panel of reviewers is also being assembled to review the twenty-one proposals that were received last January 11, 2016. IonE anticipates that the final selection of proposals will be determined by end of February 2016.