Benefitting beekeeping farmers through the location of apiaries on pollinator-friendly solar arrays.

AGRI Sustainable Agriculture Demonstration Grant 2018

Bolton Bees

Chiara Bolton
1130 Charles Ave
Saint Paul, MN 55104

boltonbees@gmail.com
O: 651-728-1530
M: 651-728-1530

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1130 Charles Ave
Saint Paul, MN 55104

boltonbees@gmail.com
O: 651-728-1530
M: 651-728-1530

Application Form

Project Name

Project Name*

Name of Project

Benefitting beekeeping farmers through the location of apiaries on pollinator-friendly solar arrays.

Project Outline

County(ies) where project will take place:*

Washington, Caver, Chisago, Anoka

Project Duration (Yrs.):*

2

Comment: *3 years of reports & 4 payments if awarded.*

Start Date:*

04/01/2018

End Date:*

04/01/2020

***Note:** An annual project report is due in December of each year. If awarded funding, a State of Minnesota contract must be completely signed by the Grantee and the State before any funds can be spent.

If you (or your organization) are awarded a grant, we may request your Social Security number or Federal Tax I.d. number in order to process the grant. Do not provide that information now.

Total Budget Request*

*Cannot exceed $25,000.

$25,000.00

Abstract:*

One paragraph that summarizes your project. Limit 1,000 characters, including spaces.

The advantages of co-locating bees with solar include: 1) increased community buy-in for solar developments, 2) increasing surrounding crop yields, 3) production of Solar Honey, and 4) guaranteed healthy habitat for all pollinators. The Solar Honey Company (SHC) was the first beekeeping company in the nation to form this partnership with Solar Developers, and its efforts were featured in National Geographic, Modern Farmer, Martha Stewart, etc. In order for beekeepers to form these partnerships, however, there needs to be a financial incentive. The costs associated with maintaining healthy hives has increased, and the money beekeepers currently earn from selling honey has been negatively impacted by cheap imported honey. This project will determine if there is a national market for Solar Honey™. If a market exists, Beekeeping Farmers will directly benefit. Their income will increase as they are offered a more profitable market through which to sell their honey.

List the enterprise(s) involved in this project:*

i.e. field crops, fruit, vegetables, livestock, energy.

livestock, energy, honey production

Project Objectives:*

List up to three objectives of your project. What are you trying/testing/demonstrating?

Objective 1.

SHC will work with a consultant to connect with companies that value solar energy, pollinator habitat, and local beekeeping. These companies will be interested in the mission of sustainability associated with Solar Honey. A list of corporate solar subscribers interested in having custom Solar Honey jars with their logos will be generated.

Objective 2.

SHC will contract with corporate accounts for Solar Honey. Each account should require custom packaging for at least 20,000 lbs of honey. The more accounts acquired-- or the more honey purchased per account-- the better. Having a market for Solar Honey will allow beekeepers to be more profitable. Apiary placement on pollinator-friendly solar arrays will allow solar developers to gain community buy-in for installations. Other farmer's crop yields near the solar-array apiaries will increase.

Objective 3.

Our goal is to place hives on 4-15 pollinator-friendly solar arrays (30-60 hives at each array) located in Washington county, Chisago county, Ramsey county, and/ or Carver county. The number of hives placed depends on the size of the honey order. Beekeepers typically harvest 100-150 pounds of honey from each hive. The honey will be harvested and kept separate from other honeys and marketed as SolarHoney. It will be placed into custom packaging and delivered to the companies to sell.

Farmer Applicants Only

Agricultural Products

Did you grow or raise at least $1,000 worth of agricultural projects for sale last year?

[redacted]

If Yes: (answer the following three questions)**:**
If No: You do not qualify to apply as a farmer to this program.

How do you market your farm products?

We use a distributor for our location-specific honeys. [redacted] We sell these on our website.

How many years have you been farming?

7

List any farm or agriculture organizations you belong to

E.g. Mn Farmers Union, MN Farm Bureau, Sustainable Farming Association of MN, MN Corn Growers, MN Fruit & Vegetable Growers, etc.

MN Farmers Union, MN Grown, Stillwater Bee Club, MN Hobby Beekeepers Association, American Beekeepers Federation, MN Honey Producers

What % of labor do you contribute to your farm?

[redacted]

Technical Cooperator(s) involved in your project:

You must involve at least one Technical Cooperator. She or he should have technical expertise that will strengthen that project. It might be assistance in soil science, biology, agronomy, horticulture, entomology, Extension, engineering, marketing, finance, data collection, statistics, etc. Use the Technical Cooperator to help design the project, carry it out, and/or review and interpret the results. This person is expected to serve as an advisor - not someone you pay to do the project for you. A Technical Cooperator cannot be a family member.

*You must include a Cooperator commitment letter with your application (upload below).

Please Provide: Name(s), Type of Expertise, and how each Cooperator will be involved in the project

Michelle Medina will serve as the Technical Cooperator for the proposed Agricultural Sustainability Demonstration project. She is the Director of Renewable Energy at the Minnesota Farmers Union. She has a background in both agriculture and in promoting support for renewable energy usage throughout Minnesota. Her expertise will be an asset to this project as she serves as an advisor in navigating the world between

agriculture and solar developments. Michelle will work with SHC to coordinate activities and provide education for solar developers and beekeepers. She will assist in connecting SHC with beekeepers and farmers throughout Minnesota.

Techinical Cooperator Commitment Letter(s)

The letters should describe the Cooperator's expertise and his/her role in the project. If the cooperator is to be paid, the letter must include the hourly rate.

Each upload box can only take one document. The document may be a scan of several documents in one. For example, to upload four commitment letters, scan all four of them at once and upload the resulting document into an upload box.

Medina - Letter of Support.pdf

Non-Farmer Applicants Only

Type of Applicant

Farmer Cooperator(s) involved in your project:

You must have at least one Farmer Cooperator who is meaningfully involved in designing and carrying out the project. The budget should include funds to compensate the farmer for his or her involvement. The farmer is expected to be involved in the project - not simply providing land where it can be conducted.

*You must include a Cooperator commitment letter with your application (upload below).

Please Provide: Name(s), Type of Farming Experience of each farmer, and how each farmer will be meaningfully involved in the project

Farmer Cooperator Commitment Letter(s)

The letters should describe the Cooperator's expertise and his/her role in the project. If the cooperator is to be paid, the letter must include the hourly rate.

Each upload box can only take one document. The document may be a scan of several documents in one. For example, to upload four commitment letters, scan all four of them at once and upload the resulting document into an upload box.

Project Details

Short description of farming operation(s) involved:*

*Limit 1,000 characters, including spaces.

SHC is a public benefit corporation. This company was formed to purchase Solar Honey from beekeepers. Solar Honey is honey produced from pollinator-friendly solar arrays. For the first two years of the project,

SHC will exclusively work with Bolton Bees. Bolton Bees is a beekeeping farming operation that sells location-specific honey from throughout Minnesota. They are also queen breeders and raise MN-Hardy queens adapted to our northern climate. SHC and Bolton Bees are both owned by Chiara and Travis Bolton. They will be directly involved with the entire project. If the project is successful, and a market for Solar Honey is established-- other beekeepers throughout Minnesota will be directly involved. They will have an opportunity to become part of the network of solar beekeepers. Their bees will be located on pollinator-friendly solar arrays—areas considered to be healthy habitats—and they will be given a premium rate for the honey extracted from the solar arrays.

Project Rationale*

What is the purpose of the project?
Why is it important?
*Limit 2,500 characters, including spaces.

The goal of this project is to create a situation in which beekeepers can place hives on pollinator-friendly solar arrays (guaranteed healthy habitat) and sell their honey harvested from those hives at a premium. This grant will focus on establishing the market potential for Solar Honey.

USDA reported that there were 1,178,800 hives located in North Central states during 2016/17. According to Bee Informed Partnership, bee colonies in this region suffered an average loss of 45.24% during the same time period (more than 500,00 colonies) . 2015 Federal Pollinator Protection Plan established a goal to stabilize annual losses at 15% of hives. Beekeepers in the region suffer an annual loss of more than $100 million because of honeybee colony deaths.

Providing healthy habitat is a great way to help. Moreover, pollinator-friendly solar is cost -effective, and enriches the ground by establishing deeper root systems. In 2016 alone, Minnesota established pollinator-friendly solar sites equivalent to 1,500,000 homes having a 6'x12' pollinator garden (2,300 acres). With tens of thousands of acres of solar sites proposed to be build in the region over the next two years, imagine the positive effect they can have if planted to be pollinator-friendly. By adding apiary placement to solar arrays, solar developers will be adding value to their projects. This will result in more developments being approved, thus creating less reliance on fossil fuels.

SHC is creating a market for beekeeping farmers to sell their honey at an above- average wholesale price. This is important because:

1) beekeepers are currently paid a low price per pound of honey, causing the business of apiary management, harvesting and extracting to be financial unattractive ,

2) the demand for honey continues to increase. However, 80% of honey consumed was imported in order to meet the growing demand,

3) the imported prices are significantly lower than US prices, and the honey is often adulterated—thereby both reducing the quality of honey available to consumers and driving the price of local honey down .

Project Design and Methods

What are you going to do? Describe in detail how you will do your project from beginning to end. Be as specific as you can. Use a timeline and drawings or diagrams (for example: field map, crop rotation plan, building or paddock design, layout of test/demonstration plots, etc.)
*Limit 5,000 characters, including spaces. Upload any documents below.

Throughout the entire project, SHC will work with the Minnesota Farmers Union (MFU) to coordinate activities and provide education for solar developers and beekeepers. We will connect with solar developers

who are installing solar arrays in the Minnesota via phone, email, in-person, or at conferences. They will learn about the importance of planting pollinator-friendly and apiary placement.

University of Minnesota experts, including Dr. Marla Spivak and Dr. Karen Oberhauser, have already worked with state agencies to establish what constitutes "pollinator-friendly" in the context of a solar array—the standards just need to become more widely used throughout Minnesota. Working in coordination MFU and SHC will provide this education.

SHC will attend and present at regional beekeeping conferences and local beekeeping clubs, educating beekeepers about this opportunity. We will teach beekeepers how to be part of SHC's network of solar beekeepers. We will offer these beekeepers a premium for their honey, which we will bottle and re-sell nationally. SHC will also educate the community and other local farmers about the benefits of pollinator-friendly solar with apiary placement. This will be accomplished through attending local township meetings and hearings, publishing articles (in farming magazines, beekeeping magazines, local newspapers, online publications, etc.), and other media outlets.

Tasks to be completed:

Year 1-

1. Form a contract with consultant to begin researching corporations that would be interested in purchasing Solar Honey. These companies will likely value sustainable practices and may already be corporate solar subscribers. Work with consultant throughout both years, continuing to develop the Solar Honey market.
2. Form an agreement with a company for purchasing Solar Honey in custom jars. If agreement is placed before May 15, 2018 the order can be fulfilled by October 2018. Goal for year 1 is to have contracts that cover the purchase of 20,000 lbs of honey, ideally from one account.
3. Place hives on pollinator-friendly solar arrays by June 2018. Place one hive for every 100 lbs of honey ordered. Bolton Bees currently has [redacted] in operation for honey production, of which [redacted] can be used for Solar Honey production. It is expected that we will to need to purchase 100 hives for this project. One hive costs [redacted]. As queen breeders, we will be able to take that one hive and split it into two after the harvest. This will allow for more Solar Honey production in year 2.
4. Design a custom jar or packet for corporate customer/s. Work with graphic designer and University of MN DesignU.
5. Harvest 20,000-25,000 lbs of Solar Honey by August 2018. Extract honey separately from other honeys. Do not pasteurize honey. Keep the honey in raw form. Deliver honey to corporate accounts.

Year 2:

6. Renew year 1 agreements with companies to purchase Solar Honey in custom jars. Form new contracts with new corporate clients. If agreement is placed before May 15, 2019 the order can be fulfilled by October, 2019. Goal for year 2 is to have contracts that cover the purchasing of 40-60,000 lbs of honey, ideally from 2-3 accounts.
7. Place hives on pollinator-friendly solar arrays by June 2019. Place one hive for every 100 lbs of honey ordered. Bolton Bees is projected to have 1000 hives in operation for honey production by 2019, of which 600 will be used for Solar Honey production. The hives will be located on 13-15 pollinator-friendly solar arrays.
8. Design a custom jar or packet for corporate customer/s. Work with graphic designer and University of MN DesignU.
9. Harvest 40,000-60,000 lbs of Solar Honey by August 2019. Extract honey separately from other honeys. Do not pasteurize honey. Keep the honey in raw form. Deliver honey to corporate accounts.

After year two, SHC will work with other beekeepers in addition to Bolton Bees. Prior to this project, Bolton Bees has successfully completed one year of Solar Honey harvest, extracting 2000 lbs of Solar Honey and bottling it into 5,000 6oz jars by weight. The Solar Honey was also used on ice cream at the Minnesota Honey Producers both at the state fair. Bolton Bees will smooth out the kinks of the operation during the term of the project. After the 2019 harvest, SHC will begin working with the network of Solar Honey Beekeepers it

has established throughout the project. We will purchase the honey from the beekeepers at an above market wholesale rate. This will allow SHC to produce and sell more Solar Honey.

Design and Methods Uploads

*Each upload box can only take one document. The document may be a scan of several documents in one.

solar honey .png

Evaluation*

How will you document what happens? For each of the project objectives you listed above, what information will you collect to be able to determine whether your grant project "works" and whether you'd recommend it to other farmers? Be specific. (Note: Projects do not have to work out the way you think or want them to in order to be successful. Often it's equally important to know what doesn't work or what not to do so don't be afraid to try something others might consider risky.)
*Limit 3,000 characters, including spaces.

SHC will evaluate if Objectives 1,2 and 3 were successful based on whether the task could be completed or not. If the answers are "yes" to these questions, then the object was accomplished:

1) Did SHC generate a list of corporations that would be interested in having Solar Honey in custom packaging?
2) Did SHC form agreements with businesses to purchase a total of 20,000 lbs of Solar Honey in year 1 and 40-60,000 lbs of Solar Honey in year 2?
3) Did SHC place 200-600 hives on 4-15 pollinator-friendly solar arrays? Did SHC produce on average 100lbs of honey per hive?

Other objectives that we will measure include:

1) Did SHC coordinate activities and provide education for solar developers about apiary placement on pollinator friendly solar arrays?
2) Did SHC attend and present at regional beekeeping conferences and local beekeeping clubs, educating beekeepers about this opportunity?
3) Did SHC educate the community and other local farmers about the benefits of pollinator-friendly solar with apiary placement?

SHC will measure the overall success of the project and determine that there is a market for Solar Honey if 1) SHC is able to acquire corporate customers purchasing 20,000 lbs+ of Solar Honey and 2) SHC is able to retain their corporate customers in year 2.

As the project continues past the two years of the grant, we will measure the amount of Solar Honey Beekeepers in our network and if they were paid an above market rate price for their Solar Honey.

Outreach Plan*

How will you share what you learn so Minnesota farmers can benefit from your work? For example: will there be newspaper or newsletter articles? Will you speak at meetings or conferences? Will you post information on your (or your cooperator/advisor's) website? All projects must have an outreach event in the **final year** of the project. We encourage you to hold a field day, if possible. In your budget, you can request funds for one outreach event.
*Limit 2,500 characters, including spaces.

SHC will coordinate outreach events throughout the entire project. SHC will attend and present at regional beekeeping conferences and local beekeeping clubs, educating beekeepers about this opportunity. SHC will also attend local township meetings and hearings. SHC has already received a lot of press regarding their partnership with solar developers during 2017 (National Geographic, Smithsonian, Martha Stewart, Modern Farmer, Star Tribune, Pioneer Press, Al Jazeera, Solar Power World, and more). It is expected that the press will continue and will be published in farming magazines, beekeeping magazines, local newspapers, online publications, etc. In addition, the product itself will be a tangible tool that the end users will have to be reminded about Solar Energy, beekeeping, and pollinator-friendly habitat.

Budget Detail*

- Download the budget table complete, and upload.
- Use realistic estimates. Only include amounts you are requesting. Total budget must not exceed $25,000. Do not include in-kind amounts.
- Grant may be used for project related costs only, not day-to-day farming expenses.
- Provide justification for each item - why needed, how many, etc.
- For travel, use a rate of $.54/mile

2018 SADG Application Budget Sheet (version 1).xlsx

Other Sources of Funding*

Have you received, applied for, or do you plan to apply for other sources of funding to support this project?

[redacted]

If Yes, Explain:

[redacted]

File Attachment Summary

Applicant File Uploads

- Medina - Letter of Support.pdf
- solar honey .png
- 2018 SADG Application Budget Sheet (version 1).xlsx

Minnesota Farmers Union
305 Roselawn Ave E, Suite 200
St. Paul, MN 55117

12/12/17

To whom it may concern,

My name is Michelle Medina and I am the Director of Renewable Energy at the Minnesota Farmers Union (MFU). My background is in agricultural education and my current work focuses on educating farmers and rural residents on the opportunities of renewable energy, as well as connecting them to resources to determine if, or what type of renewable energy would best fit their needs. I am more than willing to serve as the Technical Cooperator for the Solar Honey Companies proposed Agricultural Sustainability Demonstration project. MFU's policy supports that pollinator friendly habitat be utilized at large scale solar developments, especially those on agricultural land, to enrich the soil and create more habitat for bees, which are essential to agriculture.

My expertise will be an asset to this project, as I will serve as an advisor in navigating between farmers and solar developments. I will work with the Solar Honey Company to coordinate activities and provide education for solar developers and beekeepers. I will assist in connecting the Solar Honey Company with beekeepers and farmers throughout Minnesota. Minnesota Farmers Union has a large network with member in all 87 counties, which will help in this project. MFU also supports local foods and local farmers, and we see this grant as being a win-win-win for farmers, beekeepers, and pollinators.

I hope that you consider their grant application for approval.

If you have any questions please feel free to contact me at 651-288-4096 or by email at Michelle@mfu.org.

Thank you,

Michelle Medina
Director of Renewable Energy
Minnesota Farmers Union


THE STACKING OF
MULTIPLE BENEFITS
TO FARMLAND
SOLAR ENERGY • LOCAL BEEKEEP
SOLARHONEY
CERTIFIED
• POLLINATOR FRIENDLY

IV. Budget Sheet SADG application

Budget Worksheet SFY2018

A. Analysis

[redacted]	[redacted]

[redacted]	[redacted]

[redacted]	[redacted]

[redacted] *Consultants and Other Purchased Services (contractors, bookkeepers, paid*

2018

Name	Description of Service or Expertise
Molly Janice Smith	years of experience. She is skilled in both technical

2019

Name	Description of Service or Expertise
Molly Janice Smith	years of experience. She is skilled in both technical

2020

Name	Description of Service or Expertise
Molly Janice Smith	years of experience. She is skilled in both technical

C. Personnel (Labor - family or hired. Only include labor directly related to gr
normal farm operations.)

2018

Name	Description of Work
SHC	commisiioner hearings, bee clubs, solar developer associatin

2019

Name	Description of Work
SHC	commisiioner hearings, bee clubs, solar developer associatin

2020

Name	Description of Work

D. Supplies and Materials (Seed, fuel, purchased inputs, plot markers, office s
Purchase of farm equipment and other depreciable assets will not be funded.

2018

Items	Cost Each
[redacted]	[redacted]

[redacted]

[redacted]	Cost Each

2020	
Items	**Cost Each**

E. Use or Rental of Farm Equipment

2018	
[redacted]	[redacted]

[redacted]	
[redacted]	[redacted]

[redacted]	
[redacted]	[redacted]

[redacted] *Outreach Costs (Field day and other costs associated with outreach/publici*

2018	
[redacted]	[redacted]

2019	
[redacted]	[redacted]

[redacted]	
[redacted]	[redacted]

[redacted] *Communication (Telephone, postage, internet)*

2018	
[redacted]	[redacted]

[redacted]	
[redacted]	[redacted]

[redacted]	
[redacted]	[redacted]

[redacted]

2018	
[redacted]	[redacted]

2019	
[redacted]	[redacted]

[redacted]	
[redacted]	[redacted]

[redacted]

Item	2018
[redacted]	
[redacted]	
[redacted]	
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	[redacted]

[redacted]	[redacted]
	[redacted]
	[redacted]
	[redacted]

[redacted]
[redacted]

[redacted] *assistance, etc.)*

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
		[redacted]
		[redacted]

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
		[redacted]
		[redacted]

[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

		[redacted]
		[redacted]

[redacted]

$/Hour	Number of Hours	$ Total
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]

[redacted]	[redacted]	[redacted]
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[redacted]	[redacted]	[redacted]
		[redacted]
		[redacted]
		[redacted]

[redacted]
[redacted]

Standard Charge/Acre	$ Total
	[redacted]
	[redacted]
	[redacted]

[redacted]	[redacted]
	[redacted]
	[redacted]
	[redacted]

[redacted]	[redacted]
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	[redacted]

Purpose	Miles (.54/mile)	[redacted]

		[redacted]
		[redacted]
		[redacted]

[redacted]	[redacted]	[redacted]
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