

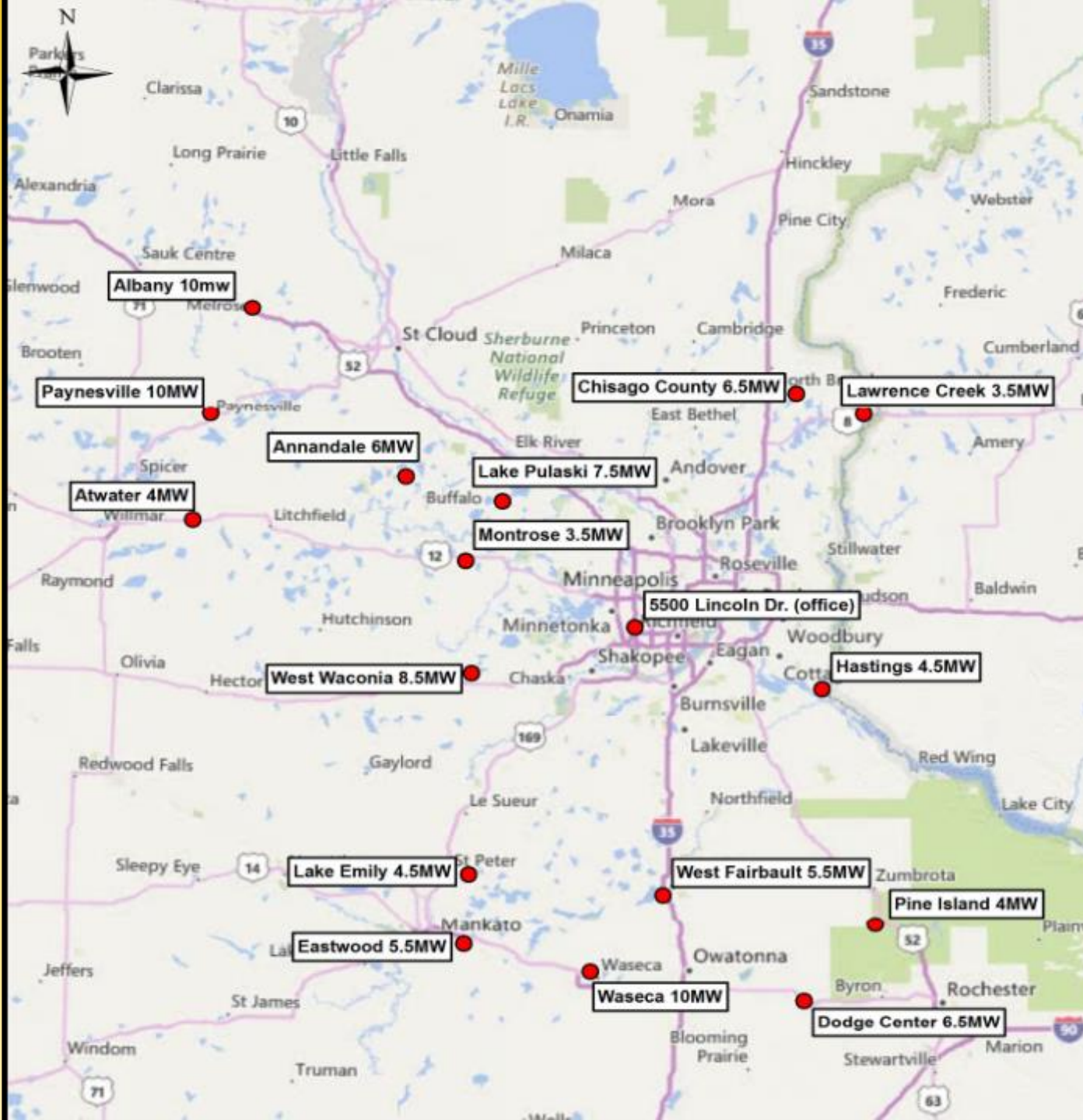
2022 Habitat Friendly Solar Summit

Aurora Utility Solar Case Study

We exist
to Heal
the Earth



Jake Janski
Director of Field Services



Aurora Solar

- 16 sites across 12 Counties
- Site size ranges:
 - 3.5-10 MW
 - 40-100 Acre
- Dry sandy soil to heavy wet soil types
- Habitat Friendly seeding throughout



Seed Mix Design

Goals: Habitat vs Grazing
Tolerance for disturbance
Cost and Market Availability

Soil Types and Hydrology
Germination Success
Species to Avoid



**Aurora Solar
Array Mix - Sandy Soils**

8740 77th Street NE Otsego, MN 55862

Date:	10/24/2016
Total Acres:	1.00
Grass lbs/ac:	11.70
Forb lbs/ac:	1.30
Cover Crop lbs/ac:	15.00
Total lbs/ac:	28.00



**Aurora Solar
Prairie Mix - Xeric**

8740 77th Street NE Otsego, MN 55862

Date:	10/24/2016
Total Acres:	1.00
Grass lbs/ac:	9.75
Forb lbs/ac:	3.25
Cover Crop lbs/ac:	15.00
Total lbs/ac:	28.00

	Scientific Name	Common Name	% of Mix	PLS lbs/ac	Total PLS lbs
Grasses:	<i>Bouteloua curtipendula</i>	Side-Oats Grama	25.00	3.25	3.25
	<i>Bouteloua gracilis</i>	Blue Grama	25.00	3.25	3.25
	<i>Carex bicknellii</i>	Bicknell's Sedge	2.50	0.33	0.33
	<i>Carex brevior</i>	Plains Oval Sedge	1.50	0.20	0.20
	<i>Elymus trachycaulus</i>	Slender Wheat Grass	5.00	0.65	0.65
	<i>Elymus villosus</i>	Silky Wild Rye	5.00	0.65	0.65
	<i>Koeleria macrantha</i>	Junegrass	2.00	0.26	0.26
	<i>Schizachyrium scoparium</i>	Little Bluestem	10.00	1.30	1.30
	<i>Sporobolus cryptandrus</i>	Sand Dropseed	14.00	1.82	1.82
	Forbs:	<i>Allium canadense</i>	Wild Garlic	0.20	0.03
<i>Allium stellatum</i>		Prairie Onion	0.20	0.03	0.03
<i>Aquilegia canadensis</i>		Columbine	0.15	0.02	0.02
<i>Asclepias tuberosa</i>		Butterfly Milkweed	0.20	0.03	0.03
<i>Chamaecrista fasciculata</i>		Partridge Pea	4.50	0.60	0.60
<i>Dalea purpureum</i>		Purple Prairie Clover	0.80	0.10	0.10
<i>Lupinus perennis</i>		Wild Lupine	0.50	0.07	0.07
<i>Monarda punctata</i>		Spotted Bee Balm	0.25	0.03	0.03
<i>Penstemon gracilis</i>		Slender Beardtongue	0.10	0.01	0.01
<i>Ratibida columnifera</i>		Long-Headed Coneflower	1.70	0.22	0.22
<i>Rudbeckia hirta</i>		Black Eyed Susan	0.25	0.03	0.03
<i>Solidago nemoralis</i>		Old Field Goldenrod	0.10	0.01	0.01
<i>Verbena stricta</i>		Hoary Vervain	0.75	0.10	0.10
<i>Zizia aurea</i>	Golden Alexanders	0.20	0.03	0.03	
Cover Crop:	To be determined at time of seeding			15.00	15.00

Species subject to change based on availability

	Scientific Name	Common Name	% of Mix	PLS lbs/ac	Total PLS lbs	
Grasses:	<i>Bouteloua curtipendula</i>	Side-Oats Grama	24.00	3.12	3.12	
	<i>Bouteloua gracilis</i>	Blue Grama	25.00	3.25	3.25	
	<i>Carex bicknellii</i>	Bicknell's Sedge	2.00	0.26	0.26	
	<i>Elymus trachycaulus</i>	Slender Wheat Grass	3.00	0.39	0.39	
	<i>Koeleria macrantha</i>	Junegrass	2.00	0.26	0.26	
	<i>Schizachyrium scoparium</i>	Little Bluestem	9.00	1.17	1.17	
	<i>Sporobolus cryptandrus</i>	Sand Dropseed	10.00	1.30	1.30	
	Forbs:	<i>Chamaecrista fasciculata</i>	Partridge Pea	10.00	1.30	1.30
		<i>Dalea candida</i>	White Prairie Clover	1.00	0.13	0.13
		<i>Dalea purpureum</i>	Purple Prairie Clover	4.00	0.52	0.52
<i>Echinacea pallida</i>		Pale Purple Coneflower	1.00	0.13	0.13	
<i>Lupinus perennis</i>		Wild Lupine	1.00	0.13	0.13	
<i>Monarda punctata</i>		Spotted Bee Balm	1.00	0.13	0.13	
<i>Penstemon gracilis</i>		Slender Beardtongue	0.25	0.03	0.03	
<i>Potentilla arguta</i>		Prairie Cinquefoil	0.25	0.03	0.03	
<i>Ratibida columnifera</i>		Long-Headed Coneflower	3.00	0.39	0.39	
<i>Rudbeckia hirta</i>		Black Eyed Susan	1.50	0.20	0.20	
<i>Solidago nemoralis</i>		Old Field Goldenrod	0.20	0.03	0.03	
<i>Tradescantia bracteata</i>		Prairie Spiderwort	0.25	0.03	0.03	
<i>Verbena stricta</i>		Hoary Vervain	1.05	0.14	0.14	
<i>Zizia aurea</i>	Golden Alexanders	0.50	0.07	0.07		
Cover Crop:	To be determined at time of seeding			15.00	15.00	

Species subject to change based on availability

confidential

Kristen Swenson

Aurora's Assortment of Habitat Friendly Seed Mixes
 3 Seeding Area Types: *Open Prairie, Arrays, and Wetlands*
 Up to 4 Seed Mix Options for each:
Xeric soils, Mesic soils, Heavy soils and "Weed Control" mixes





Creating & Implementing a Vegetation Plan

Understanding the Site Goals and Seed Mixes Designed
Establishment vs Long Term Maintenance Phases
Using the Whole Toolbox

Timelines and Metrics
Setting Expectations
Planning to be Adaptive





Vegetation Management: Grazing Pollinator Habitat

Height and Density reduction
Fire Risk Mitigation
Agricultural Utilization

Reduced Risk of Infractions
Nutrient Recycling
Habitat Enhancement?





Post-Grazing of Pollinator Habitat

Left: Low intensity graze deployment for vegetation height/density reduction

Right: High intensity graze deployment for thatch removal

MNL's Pollinator Habitat Quality Study via MDA AGRI Grant

- Three-year study, starting in 2020, to determine the impacts of prescribed sheep grazing on restored pollinator habitat vegetation density and diversity
- Six study sites across MN selected All sites were seeded with diverse pollinator friendly native mixes in 2016-2017 and were considered “established” at the onset of the study
 - All will be managed with sheep grazing instead of mechanical mowing
- Each plot is sampled up to three times a year in June, July and August from 2020-2022
- 2020 baseline data shows little change in plant community composition as expected
- Annual reports are published in the MDA Greenbook (<https://www.mda.state.mn.us/greenbook>)



Post-Grazing of Pollinator Habitat
Ungrazed "Control Plot" Grazed "Study Plot"



Habitat Establishment RESULTS



Habitat Establishment RESULTS



Habitat Establishment RESULTS

A photograph of a solar farm. In the foreground, there is a dense field of tall, golden-brown grasses. In the middle ground, several rows of solar panels are mounted on metal racks, extending into the distance. The sky is overcast with grey clouds. The text "Habitat Establishment RESULTS" is overlaid in white at the bottom of the image.

Habitat Establishment RESULTS



Habitat Establishment RESULTS

Questions?



info@MNLcorp.com
Graze@MNLcorp.com
MNLcorp.com

