Feasibility of Solar Development on State-Managed Closed Landfills

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MINNESOTA
ENVIRONMENTAL QUALITY BOARD

Context

- Solar is growing in Minnesota
- Interest in siting on brownfields
- Little known about solar opportunity at state-managed closed landfills
- Past bond financing = a major barrier
- Legislature appropriated funds for this study in 2019

Why solar on closed landfills?

- Reduce pressure on higher value lands
- Generate revenues
- Generate green jobs
- Reduce greenhouse gas emissions
- Make clean energy more accessible
- Provide wildlife habitat

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Legislative charge

1. Assessment of solar potential at closed landfills
2. Identification of barriers to solar and ways to address those barriers
3. Policy recommendations to facilitate solar on closed landfills

Legislative report due December 1, 2020

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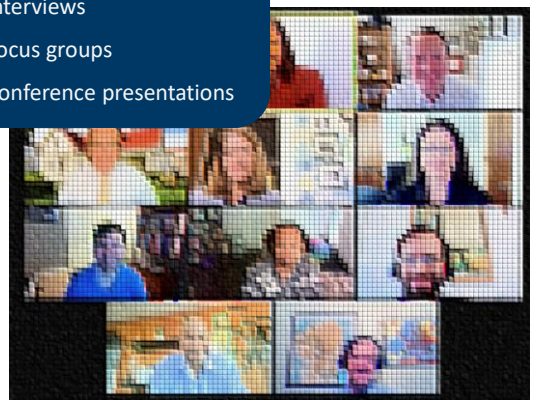
Study team & engagement

- Interagency team
  - Environmental Quality Board (lead)
  - Pollution Control Agency
  - Dept. of Administration
  - Dept. of Commerce
  - Dept. of Management and Budget
  - Metropolitan Council
- Technical contractor
  - Barr Engineering Co.

Stakeholder engagement
- Interviews
- Focus groups
- Conference presentations



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MPCA's Closed Landfill Program

- Long-term care of 110 sites
- 8,500 acres
- Varied ownership (45 state, 54 local government, 11 private)

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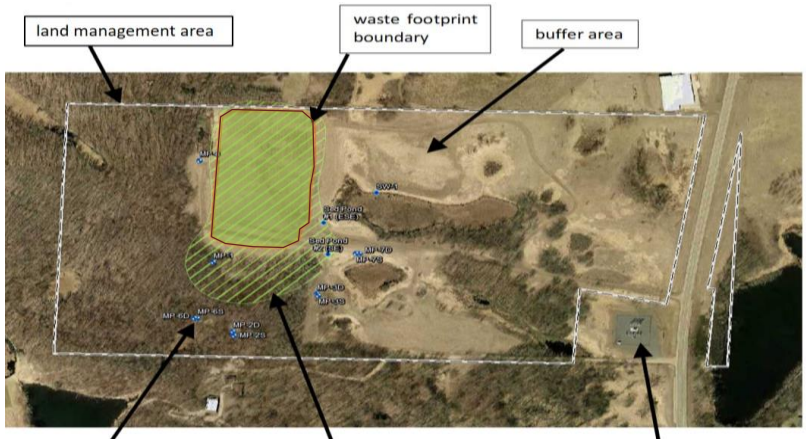
Example Minnesota Closed Landfill Program site



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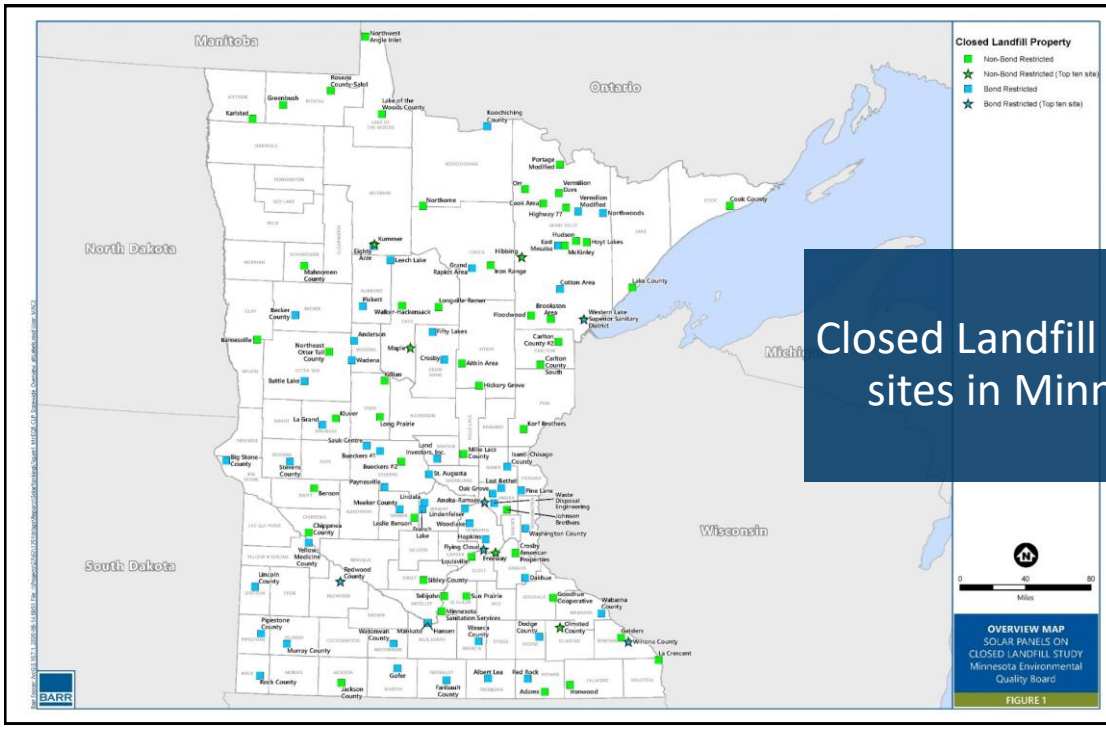

Closed Landfill Program sites in Minnesota

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Findings

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Solar potential

- 4,500 buildable acres
- 950 megawatts
- Enough to power over 100,000 homes

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Ranking of sites

	Closed Landfill Program Site	City	Est. Solar Capacity (MW)	Overall Ranking
TOP FIVE BONDED SITES	Flying Cloud Landfill	Eden Prairie	43.1	1
	Western Lake Superior Sanitary District Landfill	Duluth	40.3	2
	Anoka-Ramsey Landfill	Ramsey	27.5	4
	Redwood County Landfill	Redwood Falls	31.7	5
	Winona County Landfill	Winona	30.9	6
TOP FIVE NON-BONDED SITES	Olmsted County Landfill	Oronoco	44.8	3
	Freeway Landfill	Burnsville	23.6	8
	Hibbing Landfill	Hibbing	12.4	15
	Kummer Landfill	Bemidji	11.1	21
	Maple Landfill	Pequot Lakes	10.6	22

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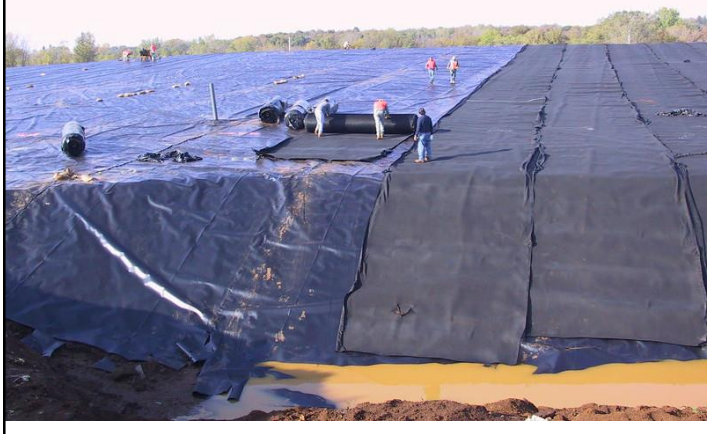
Barriers: Site-specific suitability & uncertainty



- Site-specific information needed
- Construction costs may be higher on the landfill cap
- Interconnection costs unknown
- Increased complexity

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Barrier: Past use of bond financing

- ~$100M in bonds used to make improvements across 55 sites
- Bond use attaches restrictions to land – no private use
- Few ways to release restrictions

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Barrier: Statutory authority

- Property reuse not included or funded in Closed Landfill Program mission
- Have legal authority but lack administrative ability to enter into solar leases

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Recommendation: Retire bond debt

- Frees up land for “beneficial reuse”
- Could generate significant revenues into the future
- Top five bond-restricted sites: $7.5M principal debt remaining

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Recommendation: Expand statutory authority

- Proactively reuse sites and fund work
- Establish Closed Landfill Beneficial Reuse Program
- More collaboration and study is needed
  - Ownership/operation models
  - Environmental considerations
  - Social considerations
  - Site-specific data
  - Economics

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Waste disposal evolution

- Pre 1969 Unregulated Dump
  "nearest ravine, pit, wetland…..just dump it"
- Permitted "Sanitary Landfill"
- Permitted Landfill with Engineered Systems
  liners, leachate collection, methane collection and monitoring
- **1994 Long term care of waste is a shared responsibility of a waste generating society**

Away Place Thinking Decreases

Resolution

- Recommend approval of resolution:

  The Board resolves to approve the report, *Feasibility of Solar Development on State-Managed Closed Landfills: A Report to the Legislature*, to be released by December 1, 2020.

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Feasibility of Solar Development on State-Managed Closed Landfills

Potential

- 4,500 buildable acres
- 950 MW, power 100,000 homes

Barriers

- Statutory authority & funding
- Past use of bond financing
- Site suitability & uncertainty

Recommendations

- Expand statutory authority
  - Establish & fund Closed Landfill Beneficial Reuse Program
  - Continue interagency collaboration
- Pay off the bonds and legislatively release bond restrictions

2020 Pollinator Report & Civic Engagement Framework

MINNESOTA
ENVIRONMENTAL QUALITY BOARD

November 18, 2020

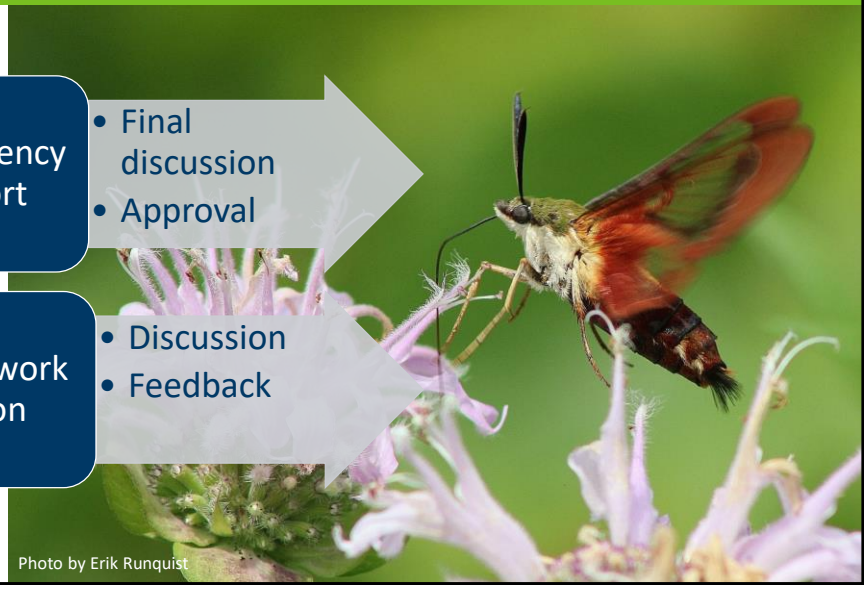
Actions for today

2020 Minnesota State Agency Pollinator Annual Report

- Final discussion
- Approval

Civic Engagement Framework for Pollinator Protection

- Discussion
- Feedback



The Issue

Why we care?

Food

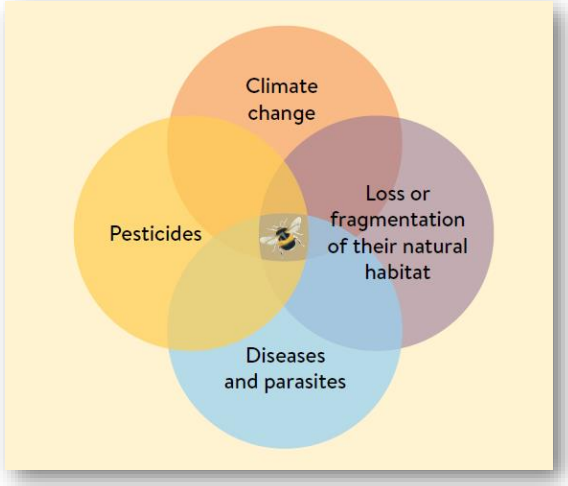
- Crop pollination

Ecosystem services

- Biodiversity
- Soil health
- Water quality

Cultural

Why are pollinators in decline?



Report Structure

Executive Order 19-28

Outcome
Healthy, diverse pollinator populations

Goal 1
Lands support pollinators

Goal 2
Judicious use of pesticides

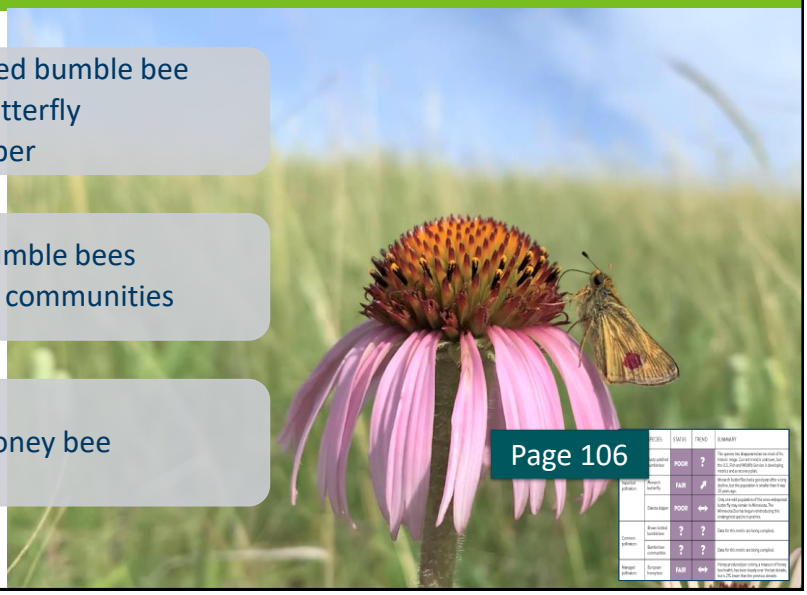
Goal 3
Engagement

Outcome: Healthy, Diverse Pollinators

Imperiled
- Rusty patched bumble bee
- Monarch butterfly
- Dakota skipper

Common
- Common bumble bees
- Bumble bee communities

Managed
- European honey bee



Outcome: Healthy, Diverse Pollinators

Progress

- Investments into pollinator surveys have begun to address the pollinator information gap.
- Minnesota Bee Atlas funded by ENTRF.
- MNZOO's Dakota skipper butterfly breeding program has recorded initial reintroduction success.

Outcome: Healthy, Diverse Pollinators

Challenges

- Limited knowledge of pollinators.
- Monarchs continue to face challenges.
- Balancing needs of managed and wild pollinator populations.


Photo by Erik Runquist


Photo by Judy Griesedieck

Recommendations

- Invest in long-term monitoring and staff.
- Support NGO and community oriented initiatives for the recovery of the Monarch butterfly.
- Increase promotion of best practices for managed pollinators.

Goal 1: Lands support pollinators


Photo by Board of Soil and Water Resources

Public lands

- State managed protected lands
- State managed rights of way

Private lands

- State private lands
- Federal private lands
- Urban and developed lands

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Goal 1: Lands support pollinators

Progress

- Steady increase in the number of species of seeds used in restoration acres.
- DNR and BWSR's partnerships with federal agencies and conservation non-governmental organizations continue to improve conditions for pollinators.
- MnDOT practices on restoration of roadsides aimed to increase native vegetation for pollinators on state highway rights of way.
- MnDOT provided funding and staff to facilitate the development of the Monarch CCAA.


Photo by Erik Runquist

Goal 1: Lands support pollinators

Challenges

- Limited capacity for ongoing habitat management.
- Availability and costs associated with ecologically viable native seeds for restorations in both public and private lands.


Photo by National Renewable Energy Lab

Recommendations

- Evaluation of habitat quality.
- Support for land, water, and wildlife conservation programs.
- State-supported seed programs
- Grow workforce for maintaining lands for pollinators.
- Seek ways to accelerate progress in the creation of pollinator habitat.

Goal 2: Judicious use of pesticides

Executive Order 19-28

Integrated pest management (IPM) is the framework that prioritizes the judicious use of pesticides.

Physical/Mechanical control

Biological control

Host plant resistance

Chemical control

Cultural control

- Provides economic component in decision making.
- Potential to reduce pesticide load on landscape.
- Allows natural systems a chance for disruptions of infestations.
- Provides farmers with suitable tools

Goal 2: Judicious use of pesticides

IPM

- Development
- Promotion
- Adoption

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Goal 2: Judicious use of pesticides

Progress

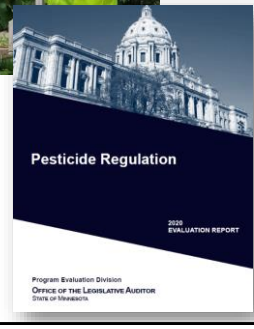
- State agencies are promoting and implementing IPM to protect pollinators in public lands.
- Staff from EQB and MDA participate in a national level Managed Pollinator Protection Working Group.
- MDA continues collaboration with the University of Minnesota using forward-thinking approaches to promote IPM through education and outreach.
- The Office of the Legislative Auditor (OLA) acknowledged that MDA has taken a number of steps to protect pollinators within their current authority and available resources.

Goal 2: Judicious use of pesticides

Challenges

- IPM is a complex approach.
- Adoption of IPM may involve more time and effort.
- Data on IPM adoption in Minnesota is limited and inconsistent.

Recommendations



- Explore pest management frameworks that prioritize pollinators.
- Expand and continue IPM education to diverse groups of stakeholders.
- Increase support for Minnesota-specific research and IPM-based strategies.
- The Legislature should revisit recommendations made in recent state reviews of pollinator health.

Goal 3: Understand, Value, and Actively Support Pollinators

- Pollinator resolutions
- Community science
- Pollinator pledges

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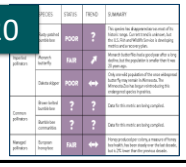

Goal 3: Understand, Value, and Actively Support Pollinators

Progress

- Agencies and organizations were able to adapt to online education and outreach.
- Minnesota had the first Habitat Friendly Solar Summit on February 2020.
- Collaboration with the Minnesota Lottery to produce a pollinator-themed lottery ticket.
- MINNCOR is producing pollinator-themed license plates.

Goal 3: Understand, Value, and Actively Support Pollinators

Lawns to legumes Pilot Program

your yard CAN BEE the CHANGE
#Lawns2Legumes

- **126** articles published
- Over **7,500** people applied for individual support grant
- Over **33,000** people have accessed the program's website.
- Over **100** volunteer couches signed up around the state to provide one-on-one assistance.
- Over **2,000** people attended L2L design workshops

Goal 3: Understand, Value, and Actively Support Pollinators

Challenges

- COVID-19 precautions can make engagement activities more challenging.
- State Agencies have limited resources and personnel for focused engagement work on pollinator protection.
- Pollinator resolutions are variable and it is difficult to assess their strength.

Recommendations

- Develop new strategies to increase public participation with COVID-19 safety in mind.
- Look for opportunities to increase coordination and collaboration with different organizations working to help pollinators in Minnesota.
- Continue support for innovative projects and explore creative ways to promote pollinator protection and conservation throughout the state.

Civic Engagement Framework (CEF) for Pollinator Protection

Civic Engagement Framework for Pollinator Protection

Executive Order 19-28

- Ensure public participation
- Build cross-sector relationships and partnerships
- Identify and support opportunities for statewide collaboration to conserve imperiled pollinators

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Project Scope

Focus areas

- Imperiled pollinators, pesticides and diversity and inclusion.

Inventory

- State agency-led pollinator related initiatives.

SWOT analysis

- Identify IPPT civic engagement strengths, weaknesses, opportunities and threats.


Photo by Nicole Gerjets

Civic Engagement Process Framework

CEF Strategies

1. Engagement in the production and distribution of the Minnesota State Agency Pollinator Annual Report.
2. Engagement to increase public participation in pollinator protection efforts and reach new audiences.

Civic Engagement Framework

Short-term Action Plan

Strategy 1

- Identify subject matter experts and interested individuals and organizations to provide public comment on the 2020 Minnesota State Agency Pollinator Annual Report (Report).
- IPPT evaluates feedback and identifies key individuals and organizations for further Report discussion.
- IPPT works on the Report, scheduling EQB updates.

Strategy 2

- Identify key stakeholders with a focus on diversity and inclusion.
- Create IAP2 matrix with key individuals and organizations to determine engagement level and keep track of progress.
- Communication plan.
- Action groups.

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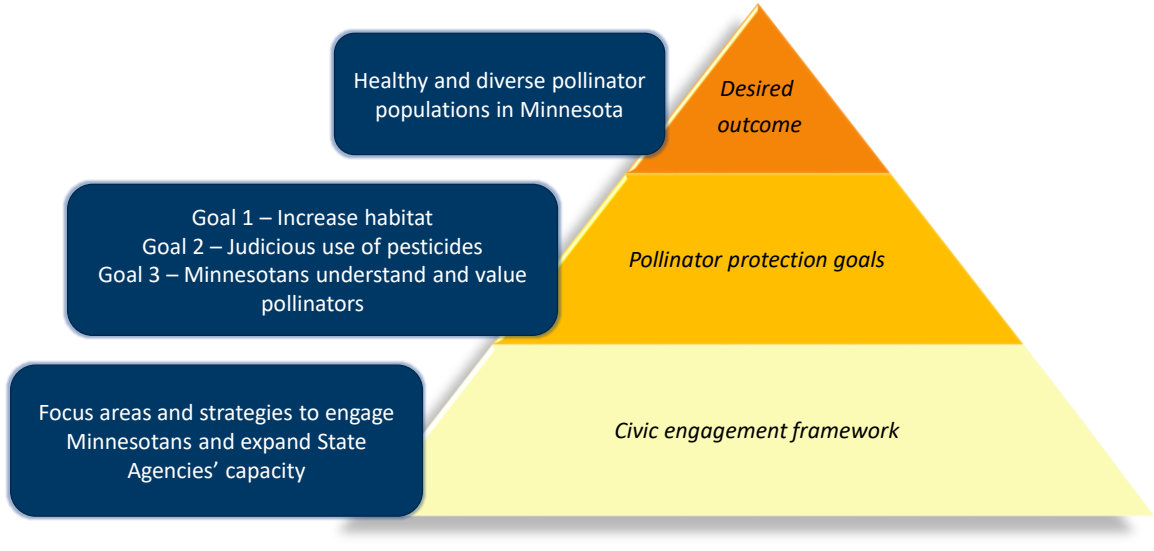
Civic Engagement Framework



Resolution

- Approve the 2020 Minnesota State Agency Pollinator Report, to be released by December 1, 2020.
- Support cross-agency collaboration to implement the recommendations in the 2020 Minnesota State Agency Pollinator Report.
- Support cross-agency collaboration to continue developing the Civic Engagement Framework for Pollinator Protection.
- Convene future meetings to monitor progress and invite public input.

Thank you!

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AGENCY LOGO HERE

Photo by Urban Roots

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