December 13, 2024

The Honourable Stephen Lecce
Minister of Energy
Ontario Ministry of Energy

Dear Minister Lecce,

Re: Submission of Agrivoltaics Canada's Response to Ontario's Affordable Energy Future

On behalf of Agrivoltaics Canada, I am pleased to submit our response to Ontario's policy proposal, "Ontario's Affordable Energy Future: The Pressing Case for More Power. Agrivoltaics Canada wishes to highlight the critical opportunity for agrivoltaic systems to help address Ontario's growing energy and agricultural needs while advancing climate resilience and economic sustainability.

Agrivoltaics Canada is the leading advocate for the integration of solar with agricultural practices to achieve synergies between energy production and land use optimization. With Ontario at a pivotal moment in its energy transition, we commend your government for prioritizing innovative and forward-looking energy strategies, Agrivoltaics should be formally recognized and prioritized as a dual use agricultural technology. Our response underscores how agrivoltaic solutions can contribute to:

- Supporting Ontario's clean energy targets;
- Reducing strain on grid infrastructure;
- Enhancing food security by maximizing land use;
- Driving economic development in rural and agricultural communities.

We look forward to collaborating with your Ministry to incorporate these solutions into Ontario's energy policy framework. Agrivoltaics Canada remains committed to providing expertise, data, and stakeholder engagement support to ensure the successful integration of agrivoltaic technologies across the province.

Thank you for considering our submission. We welcome the opportunity to discuss our recommendations further. Please do not hesitate to contact me at 416.347.1862 or at patrick@agrivoltaicscanada.ca for any additional information or to arrange a meeting.

Kind regards,

Patrick Gossage
Chairperson, Agrivoltaics Canada

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Comments on Ontario's Affordable Energy Future: The Pressing Case for More Power

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Executive Summary

Agrivoltaics Canada is the leading advocate for integrating renewable energy and agriculture through agrivoltaic solutions. We commend Ontario for recognizing the urgent need to expand energy production and supply capacity while maintaining affordability and sustainability. However, Ontario's energy policy continues to miss a critical opportunity to enable agrivoltaics—an innovative, dual land-use approach that supports renewable energy production and continued agricultural productivity.

This response highlighting agrivoltaics' transformative potential, identifies areas of alignment and missed opportunities in **Ontario's *Affordable Energy Future: The Pressing Case for More Power***, and provides actionable recommendations to incorporate agrivoltaics into Ontario's energy, agricultural, and land-use frameworks.

Introduction: What is Agrivoltaics?

Agrivoltaics is a dual land-use system where solar photovoltaic (PV) installations coexist with agricultural activities on the same land. Unlike traditional ground-mounted solar, agrivoltaics is specifically designed to preserve and even enhance agricultural productivity.

Benefits of Agrivoltaics:

1. **Maximized Land Productivity**: Farmers can generate renewable energy while continuing to grow crops or graze livestock, optimizing land use and reducing the amount of land required to produce food and energy.
2. **Enhanced Climate Resilience**: Solar panels provide shade and reduce water evaporation, protecting crops from extreme weather. Panel racking can also accommodate higher efficiency irrigation networks for more efficient water and nutrient distribution.
3. **Economic Diversification**: Farmers benefit from an additional income stream by selling electricity while maintaining agricultural outputs, which may be necessary to keep some economically marginal farms in operation.
4. **Environmental Stewardship**: Agrivoltaics supports biodiversity, reduces greenhouse gas emissions, and conserves soil and water.
5. **Improved Rural Electricity Systems:** Agrivoltaics enables distributed electricity production, increasing the reliability of Ontario's rural electricity systems, reducing system losses, and

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supporting further rural electrification. This is essential to power the next generation of electric farm equipment and advance sustainable farming practices.

Agrivoltaics exemplifies the synergy between agriculture and clean energy, positioning Ontario to meet food security, energy sustainability, and climate goals simultaneously.

Alignment with Ontario's Energy Policy Goals

Agrivoltaics Canada supports several elements of Ontario's *Affordable Energy Future* strategy:

1. **Addressing Energy Demand**: Agrivoltaics can contribute significantly to renewable energy generation without displacing agricultural land, ensuring Ontario meets its growing clean-energy needs.
2. **Promoting Economic Growth**: By creating jobs in rural areas and providing farmers with diversified income streams, agrivoltaics aligns with Ontario's focus on affordability and economic resilience.
3. **Fostering Climate Adaptation**: Agrivoltaics protects farmland from the impacts of extreme weather while generating clean energy, directly supporting Ontario's sustainability goals.

Missed Opportunities in Recent Ontario Policy Engagements

Despite alignment in several areas, Ontario's energy and land-use policies fail to adequately enable or prioritize agrivoltaics.

1. **Provincial Planning Statement (PPS) Revision**
   The PPS revision does not mention agrivoltaics, leaving it as equivalent to ground-mounted solar, restricting its implementation on agricultural lands. This oversight ignores agrivoltaics' ability to enhance agricultural productivity while producing clean energy.
   Impact: This restricts innovation, limits farmers' income opportunities, and reduces Ontario's ability to meet dual food and energy security goals with its southern Ontario land base.
2. **IESO's LT2 Energy Procurement Framework**
   The IESO also treats agrivoltaics as ground mount solar, failing to differentiate its unique benefits.
   Impact: Agrivoltaic projects are unlikely to qualify under current restrictions, sidelining an essential clean energy solution.
3. **Lack of Enabling Policy Framework and Lost Innovation Opportunities**
   Ontario has yet to create enabling regulations that differentiate agrivoltaics to enable adoption. Alberta, influenced by expert submissions like Steven Tannas' Agrivoltaics *Opportunities*

Assessment[1], recently acknowledged agrivoltaics' value and is actively supporting dual land-use where agricultural activity and productivity are maintained. Ontario must adopt a similar forward-thinking approach to support farming communities and meet clean energy needs.

The Case for Agrivoltaics in Ontario's Affordable Energy Future

To address these gaps, Agrivoltaics Canada proposes a roadmap for integrating agrivoltaics into Ontario's energy, agricultural, and land-use policies:

1. Recognize Agrivoltaics as a Distinct Land-Use Approach

- Amend the Provincial Planning Statement to explicitly define agrivoltaics as a dual-use tool, distinct from conventional ground-mounted solar systems.
- Allow agrivoltaics on prime agricultural land where it enhances, rather than diminishes, agricultural productivity.

2. Update Regulatory Frameworks

- Revise **Ontario Regulation 429/04** to allow agrivoltaic installations under the "On-Farm Diversified Use" category.
- Develop agrivoltaic-specific design guidelines, including standards for panel height, spacing, and compatibility with different agricultural practices.
- Develop agricultural productivity standards that acknowledge land can be used for many agricultural activities that are consistent with agrivoltaics (cash crops, fruits and vegetables gardens, orchards and wineries, pasturing).

3. Provide Financial Frameworks

- Maintain agricultural land tax regimes for agrivoltaic projects, to ensure farmers are not penalized for increasing land productivity.
- Support agrivoltaics through Virtual Net Metering (VNM) and Corporate Power Purchase Agreements (CPPAs), enhancing project viability and rural community benefits.

4. Fund Research and Development

- Establish a dedicated agrivoltaics research program to validate its benefits in Ontario's diverse agricultural conditions.

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[1] *AUC - 27582_X0275_Appendix H - Agrivoltaics Opportunities Assessment - Steven Tannas_000321, Alberta Utility Commission, 2023.*

- Collaborate with academic institutions to develop training programs, ensuring Ontario's workforce is equipped to design and install agrivoltaic systems.

5. Promote Community and Indigenous Engagement

- Prioritize Indigenous-led agrivoltaic projects to promote equity and community-driven clean energy development.
- Engage rural communities in agrivoltaic planning, ensuring local support and maximizing benefits.

6. Strengthen Agrivoltaics Policy Alignment Across Sectors

- Facilitate cross-ministry collaboration between energy, agriculture, and municipal affairs to ensure agrivoltaics is prioritized in policy development and implementation.
- Establish a dedicated agrivoltaics task force to address regulatory, technical, and market challenges, creating a unified strategy for its deployment.
- Coordinate with federal programs to leverage funding opportunities and align provincial agrivoltaics initiatives with national clean energy and agricultural goals.

The Risks of Overlooking Agrivoltaics in Ontario's Energy Vision

Ontario's *Affordable Energy Future* emphasizes expanding energy capacity, affordability, and sustainability. However, failing to incorporate agrivoltaics into the energy mix poses significant risks to the policy vision and the province's long-term objectives:

1. **Overreliance on Centralized Nuclear Generation**

   While nuclear energy provides reliable baseload power, an overdependence on centralized and inflexible nuclear generation could limit Ontario's ability to adapt to changing energy demands. Distributed energy solutions like agrivoltaics offer flexibility, reduce grid congestion, and improve rural energy resilience. By excluding these technologies, Ontario risks creating a less agile and less diversified energy system.

   Right sized nuclear baseload capacity combined with agrivoltaics, and the energy storage recently procured will provide clean and flexible daytime and overnight energy supply backed up by gas for emergencies.

2. **Missed Opportunity for Distributed Clean Energy**

   Agrivoltaics supports distributed energy generation, reducing transmission losses and increasing grid stability. Without prioritizing this technology, Ontario could face higher costs associated with long-distance energy transmission and delayed rural electrification—key barriers to achieving an affordable and sustainable energy system for all of Ontario including underserved rural areas.

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3. **Undermining Rural Economic Growth**

   The exclusion of agrivoltaics from energy planning and procurement risks depriving rural communities of economic opportunities. By focusing primarily on centralized energy projects, Ontario misses the chance to create skilled jobs, diversify rural income streams, and foster energy independence for agricultural regions.

4. **Delays in Agricultural Electrification**

   Ontario's policy vision highlights the need to modernize energy infrastructure but misses the connection to agricultural electrification. Agrivoltaics can drive rural electrification, supporting the transition to electric farm equipment and reducing reliance on fossil fuels in agriculture. Without agrivoltaics, Ontario risks delaying this essential transformation.

5. **Limited Adaptation to Climate Resilience Needs**

   Ontario's energy strategy does not currently address the role of energy systems in enhancing climate resilience for agriculture. Agrivoltaics mitigates extreme weather impacts by providing shade, conserving soil moisture, and stabilizing microclimates. Ignoring these advantages risks leaving Ontario's agricultural sector more vulnerable to climate upheaval.

6. **Complicated Public Image of Large-Scale Nuclear Expansion**

   Large-scale nuclear projects often face public resistance due to concerns over safety, cost overruns, and long timelines for implementation. By sidelining readily deployable and publicly supported technologies like agrivoltaics, Ontario risks eroding public confidence in its energy strategy and delaying progress toward energy goals. An all of the above approach to energy sustainability should be permitted in Ontario to ensure optimal, long-term outcomes for Ontario's diverse economy, and geography and flexibility to manage the uncertainty of the future.

Conclusion

Agrivoltaics offers Ontario an unparalleled opportunity to lead in sustainable development by integrating clean energy and agriculture. By adopting the recommendations outlined above, Ontario can enhance energy sector growth and resilience, ensure agricultural productivity, and support broad based economic growth.

Agrivoltaics Canada stands ready to collaborate with policymakers, farmers, and energy stakeholders to realize this vision, ensuring Ontario's energy future is both affordable and sustainable.

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Response to Integrated Energy Resource Plan Guiding Questions

Overarching Question

What policy options and actions should the government consider in the integrated energy resource plan to achieve Ontario's vision for meeting growing energy needs, keeping energy affordable and reliable, ensuring customer choice, and positioning us to be an energy superpower?

Agrivoltaics Canada recommends the following policy options and actions:

1. **Expand Distributed Energy Resources (DER):** Prioritize agrivoltaics as a dual-use, distributed energy resource (DER) that supports both energy generation and agricultural productivity. This ensures diversification of the energy supply mix and reduces reliance on centralized energy systems.
2. **Recognize Agrivoltaics in Policy Frameworks:** Update the Provincial Planning Statement (PPS) and Ontario Regulation 429/04 to explicitly define and enable agrivoltaics as a dual-use agricultural and energy solution.
3. **Support Economic Growth in Rural Areas:** Leverage agrivoltaics to create skilled jobs, diversify income for farmers, and drive rural electrification, aligning with Ontario's vision of energy-driven economic growth.
4. **Enhance Grid Reliability:** Encourage agrivoltaics to complement existing energy sources by producing clean energy close to consumption points, reducing grid strain and transmission losses while improving rural energy reliability.
5. **Integrate Climate Resilience:** Adopt agrivoltaics to mitigate climate risks by protecting crops from extreme weather, conserving soil and water, and stabilizing microclimates, all while generating renewable energy.

Planning for Growth

What actions should be prioritized to enhance planning across natural gas, electricity, and other fuels?

- **Prioritize Renewable Energy Integration:** Develop policies that prioritize agrivoltaics as a complementary technology to natural gas and electricity for grid stability and sustainability.
- **Facilitate Cross-Sector Collaboration:** Establish an agrivoltaics task force involving energy, agriculture, and municipal sectors to align planning and policy objectives.

Are there opportunities to enhance the province's approach to procuring electricity generation supply to better serve this priority?

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- **Adopt Dual-Use Procurement Models:** Allow agrivoltaics to participate in IESO's energy procurements on all classes of agricultural land throughout the province as a dual-use agricultural technology.
- **Incentivize Agrivoltaics Deployment and Innovative Financing:** Introduce incentives such as investment tax credits and grants to make agrivoltaic systems more financially viable for farmers and developers, allow agrivoltaics to be eligible for agricultural grant and loan programs.

What actions should government consider to promote greater access to electricity and accelerate grid connections, that will support economic growth, connecting new homes, and electrifying transportation and heating?

- **Streamline Grid Connections for Agrivoltaics:** Simplify permitting and connection processes for agrivoltaics projects, ensuring efficient integration into the grid.
- **Invest in Rural Electrification:** Use agrivoltaics as a driver for electrification in rural areas, supporting new homes, electrified transportation, farming equipment and heating (residential and farm buildings).

As the need for new transmission infrastructure grows, what steps can government take to ensure transmitters have certainty while keeping costs low?

- **Incentivize Distributed Energy Systems:** Reduce the need for large-scale transmission infrastructure by deploying agrivoltaics as a DER, enable farmers to produce and use more electricity on farm.

What policy guidance should the government provide to the Ontario Energy Board (OEB) with respect to the long-term role of natural gas in Ontario's economy and opportunities for low-carbon alternatives in the gas system?

- **Promote Electrification of Agriculture:** Encourage low-carbon alternatives to fossil fuels uses, such as heat-pumps and electrified vehicles and farm equipment, enable agrivoltaics to be a primary energy supply resource for these electrified uses to reduce diesel, heating oil, propane and natural gas dependency in rural areas and agricultural operations. Enable opportunities for agrivoltaics to convert electricity into hydrogen which can supply local hydrogen economies and potentially feed into the natural gas network reducing the carbon content of Ontario's natural gas supply.
- **Support Energy Transition:** Collaborate with the OEB to integrate renewable energy options, such as agrivoltaics, into long-term planning for a low-carbon future.

How can the government support Indigenous leadership and participation in energy planning and projects?

- **Prioritize Indigenous-Led Agrivoltaics:** Fund Indigenous-led agrivoltaics projects to promote equity and community-driven clean energy development.

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- **Establish Partnerships:** Collaborate with Indigenous communities on agrivoltaic research, training, and deployment.

How can provincial planning processes be enhanced to support high growth regions, ensure greater coordination between energy resources, and better integrate municipal, distributor, and regional planning processes?

- **Strengthen Multi-Level Coordination:** Include agrivoltaics in regional planning for rural and agricultural suburban areas to align municipal, regional, and provincial energy strategies, as a way to balance land use and energy generation while ensuring cohesive development in high-growth areas.
- **Facilitate Data Sharing and Transparency:** Develop platforms for sharing energy demand forecasts, infrastructure plans, and DER integration strategies among municipalities, distributors, and regional authorities.
- **Support Rural Municipal Capacity Building:** Provide funding and training to municipalities to support their ability to plan and implement agrivoltaics as part of broader regional energy strategies.
- **Promote Collaboration Through Pilot Projects:** Initiate collaborative pilot projects that integrate agrivoltaics into regional growth plans to demonstrate best practices and scalability.

What cooperation opportunities exist across jurisdictions to support energy trade and transportation electrification?

- **Coordinate Interprovincial Agrivoltaics Strategies:** Work with neighboring provinces to develop shared agrivoltaics initiatives, enhancing regional clean energy trade. Alberta's recent recognition of agrivoltaics as a clean energy and agricultural solution, makes it an ideal partner to lead development of agrivoltaic standards for Canada.
- **Leverage Federal Programs:** Align agrivoltaics initiatives with federal clean energy goals and funding programs to maximize resource efficiency.
- **Develop Provincial and National Standards:** Promote work between Agrivoltaics Canada OMAFRA, ENERGY, the CSA and other provinces to develop standards for agrivoltaics.

Affordable and Reliable Energy

What further steps should the government take to enable households and businesses to manage and make informed decisions about their energy use?

- **Increase Agrivoltaics Awareness:** Launch public education campaigns showcasing the cost-saving and environmental benefits of agrivoltaics for farms and rural households.
- **Provide Smart Energy Tools:** Develop tools to help users optimize energy use from distributed energy sources like agrivoltaics, empower electrification and agrivoltaic development on farms.

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What actions could the government consider to empower customers to install innovative technologies?

- **Offer Targeted Incentives:** Provide financial assistance for agrivoltaic installations, reducing upfront costs for farmers and rural businesses. Allow farmers to leverage agricultural technology research and deployment programs to test agrivoltaic solutions and then scale successful solutions.
- **Simplify Permitting:** Streamline regulatory processes for installing agrivoltaic systems, making it easier for customers to adopt innovative technologies. Adopt regulatory and approval processes that are consistent with other ag tech processes.

What specific actions could position the integrated energy resource plan to best leverage distributed energy resources (DER) that enhance local and province wide grids to support energy system needs reliably and at the lowest cost?

- **Create DER-Focused Policies:** Establish dedicated DER procurement and support mechanisms to integrate agrivoltaics into the grid effectively.
- **Develop Technical Standards:** Ensure technical guidelines are in place for agrivoltaics to function seamlessly with other DERs. Work with Agrivoltaics Canada and CSA to develop standards that define agrivoltaics from group mount solar, establish farming practices.
- **Maintain Agricultural Tax Rates:** by treating agrivoltaics as an on farm diversified use and an agricultural technology, dual-use of the land can be accomplished while maintaining existing agricultural land tax rates.

What barriers limit local distribution companies (LDCs) from enabling efficient grid operations?

- **Address Regulatory Restrictions:** Allow LDCs to support connection and integration of agrivoltaic projects in rural distribution systems where system enhancements maybe required. Enable agrivoltaic projects and newly electrified loads to dynamically provide flexibility to support local distribution operations.
- **Expand LDC Roles:** Empower LDCs to serve as facilitators for local energy solutions like agrivoltaics.

What actions can enhance collaboration between the OEB, IESO, LDCs, and stakeholders?

- **Establish a Collaboration Framework:** Create a working group to align agrivoltaics deployment and functionality across key stakeholders, ensuring consistent implementation and scaling.

Becoming an Energy Superpower

What opportunities exist to further capitalize on Ontario's leadership in nuclear innovation?

- **Complement Nuclear with Agrivoltaics:** Use agrivoltaics, battery storage, and on-farm hydrogen to further diversify and increase available daytime energy supply, reducing overreliance on nuclear for daytime balancing.

What opportunities should Ontario consider to leverage its position as a clean energy leader?

- **Expand Agrivoltaics Globally:** Position Ontario as a global leader in agrivoltaics by exporting locally generated energy, agrivoltaics expertise and technology developed in the province.
- **Integrate Agrivoltaics into Export Strategy:** Promote agrivoltaic solutions as part of Ontario's clean energy exports to neighboring jurisdictions.

Environmental Impact of the Proposal

How can Ontario maintain its clean energy advantage while minimizing impacts on land and ecosystems?

- **Adopt Dual-Use Strategies:** Promote agrivoltaics to generate clean energy while preserving food production on Ontario's farmland base and supporting biodiversity.
- **Implement Strong Guidelines:** Develop environmental and technical standards for agrivoltaic projects to ensure agricultural production is maintained, disruption to local ecosystems is minimized and to ensure there is a clear differentiation between agrivoltaics and ground mount solar.

How should planning processes address land impacts and ensure alignment with environmental goals?

- **Incorporate Environmental Assessments:** Require agricultural impact assessments tailored to agrivoltaic projects to ensure sustainable development and ongoing agricultural activity.
- **Prioritize Farmland Preservation:** Use agrivoltaics to protect agricultural productivity while contributing to clean energy goals.

Conclusion

Agrivoltaics Canada urges the Ontario government to integrate agrivoltaics into its energy, land-use, and agricultural policies. By leveraging the dual benefits of agrivoltaics, Ontario can achieve its goals of energy affordability, reliability, and sustainability while fostering economic growth and environmental resilience. Agrivoltaics represents a proven, low-risk solution that aligns with the province's vision for becoming a clean energy superpower.

We remain ready to support the Ministry with expertise, data, and stakeholder engagement to ensure agrivoltaics is fully integrated into Ontario's energy future.

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