Oxford Community Energy Co-operative

Prowind renewables

Power your life green

Our team

185 Team members in Germany

4 Team members in Canada (and growing)

12 Team members in the Netherlands

Team of experts in:

- Landscape Management
- Electrical Engineering
- Construction
- Meteorology
- Geography / Biology
- Technical System Planning
- Mechanical Engineering
- Law / Tax Law
- Economics
- Accounting
- Psychology
- Data Analysis

Our shared Vision

Development of renewable energy systems to ensure a clean environment for humanity and nature, providing communities with access to green and affordable energy.




"Oxford Community Energy Co-operative will be an enabler of a more vibrant and sustainable Oxford County community.
The ultimate goal of the co-operative is to support sustainable, joint energy generation from renewable energy sources that are owned by the community, thus allowing shared benefits and economic development in the community."

Our capabilities

Planning

Community windpark Innerkip / Cassel

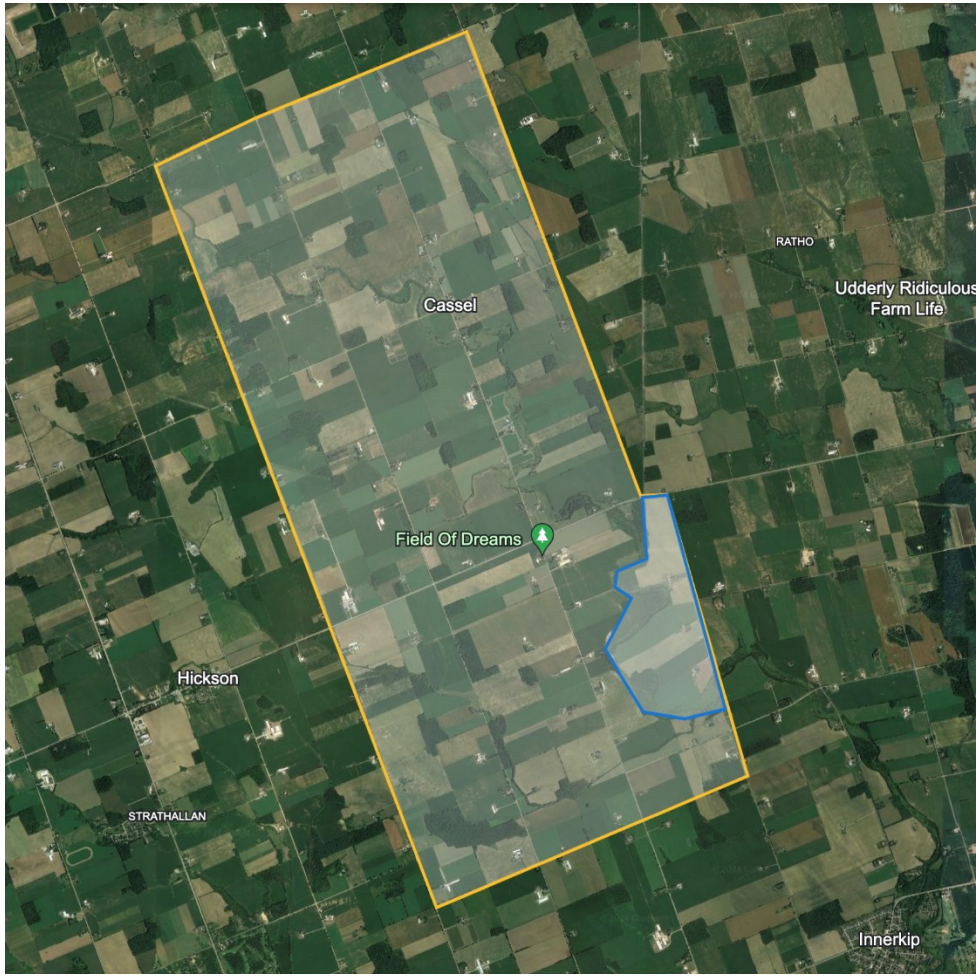
INCA Windfarm

14-18 Turbines – 6.2 to 7.2 MW turbines – 100 to 120 MW windfarm – Innerkip

8-10 Turbines - 6.2 to 7.2 MW turbines – 60 - 70 MW windfarm – Cassel

Innerkip / Cassel Landowners:

- Land Option Agreements with Landowners completed for 19 turbines – still open for a small number of additional units
- Early participation in selecting the best location and access points
- Negotiate together to achieve a fair value for their land
- Honesty and mutual problem-solving attitude
- We want to understand their needs
- Development is a 5-year process
- Requires government approval – New IESO LT 2 RFP
- Requires Municipal support
- First Nations participation is important to us
- Community participation is critical



Our local project

Community windpark Gunn's Hill

Turbines: 10 Senvion Turbines, 1.8 MW turbines
Shareholders: Community members in Oxford County and Ontario, Landowners and First Nations
Participation:

- Oxford Community Energy Co-op
- Community information sessions
- Land owner consultation
- Environmental Agencies
- Assigning contracts to local businesses

Environmental fund of $25.000.- per year, which is being regulated by the local energy coop
Education Bursary of $8000 annually for Indigenous Students

Numbers

- 25 to 28 turbines over 43 square kilometers
  (10,000 acres – average windfarm density in Ontario is 4-6 turbines per 1,000 acres)
- Total capacity up to 200 MW
- Annual production is estimated 596 GWh
- Capital investment 500 – 600 million CND
- Employment during construction over 250 people
- Focus on local resources for BOP construction
- Local community investment could be north of 30 million
- Gunn's Hill Project as a blueprint for community investment

Why plan a Community windpark now?

Summary

Emerging energy need: Forecasts project a need for approximately **5 TWh** of energy beginning in 2030 and expected to grow significantly through the 2030s

LT2 RFP procurement focus: The LT2 RFP will focus on meeting system needs in the 2030 to 2034 timeframe, with an anticipated target of **~2,000 MW**

Participation in the LT2 RFP: The LT2 RFP will be open to all non-emitting resources that can inject energy into the market, be fully operational by the milestone date for commercial operation (COD) and meet potential financial and experience requirements

Community windpark Innerkip / Cassel

What we want to do:

- We are located in Oxford County and want to support the county to reach their zero emissions goal
- Want to be transparent with the municipalities and the county
- We want to submit a bid for 200 MW wind capacity in the LT 2 RFP

What we have done:

- We have the support of many local landowners and many residence of Oxford County
- We have land option agreements for approx. 140 MW in Innerkip and Cassel
- We have meetings with HONI and IESO on connection options and submitted the CIA application with the IESO
- We have early consultation with our partner First Nations Community
- We have a community engagement plan

What we need to do:

- Seek your input for us to do meaningful community engagement and consultation
- We need your municipal support
- We want to provide all the resources necessary to support the municipality in the permitting process

Community Engagement Plan

Community windpark Innerkip / Cassel

Municipality

- Council meeting March 6, 2024
- Additional council meeting in the fall 2024

  And

  Throughout the development

Website

- Project updates
- Life Questions and Answers site with 24-hour response time
- Milestone announcements
- News

Community Consultation

- Personally handed information package to all farmers in the project area
- Information dinner introducing the project vision incl Q&A
- Community meetings in May, in July and in October
- Community Surveys before the fall meeting to understand questions and concerns
- Media release in May 2024

First Nations Consultations

- Met with First Nation of the Grand River
- Engage Guide from the FN Community
- Consultation process with FN group having Heritage claims on the municipality
- Partner with FN in the project ownership

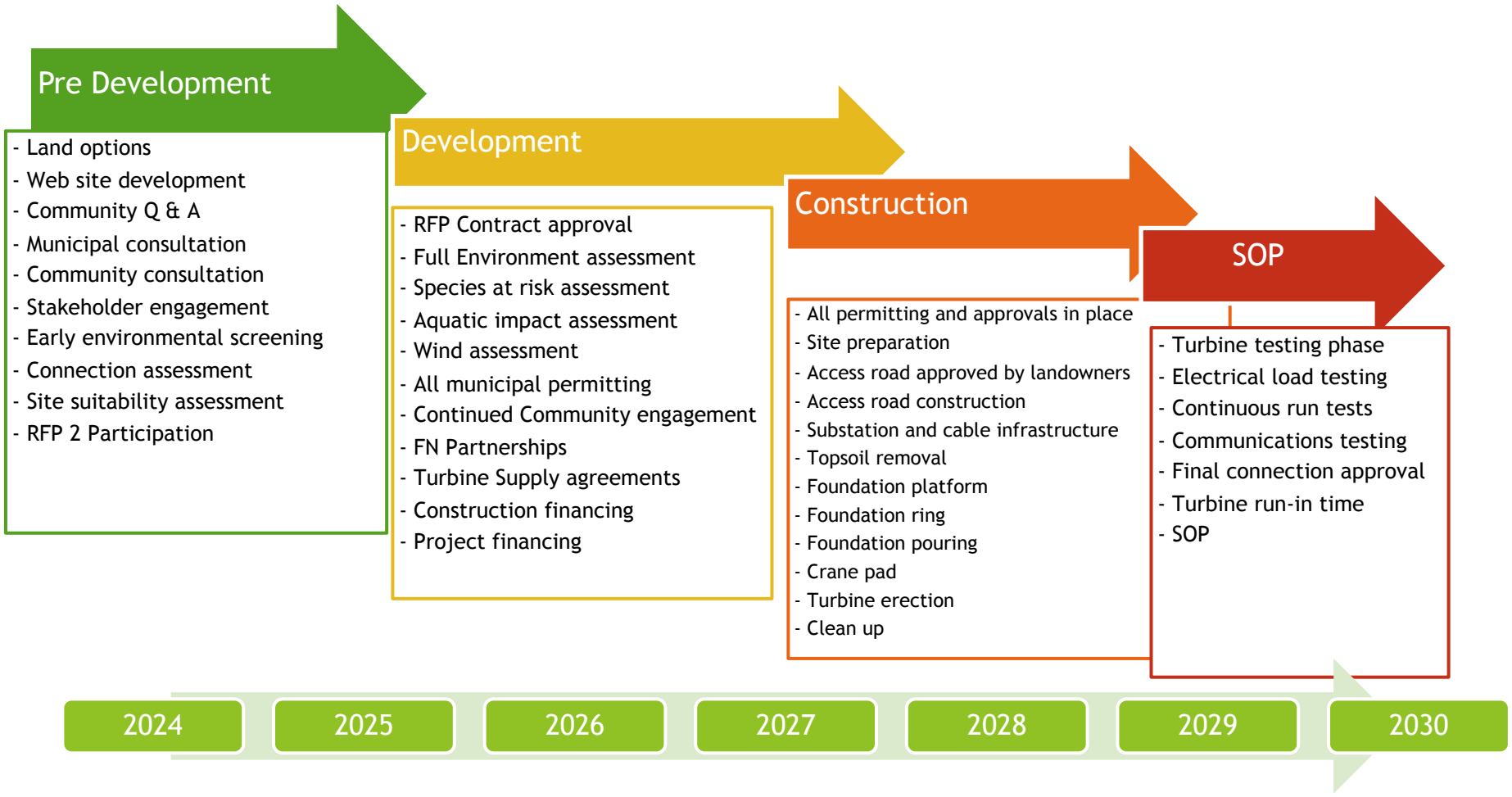
Community Leaders

- Ontario Federation of Agriculture OFA
- Oxford County Federation of Agriculture OCFA
- Upper Themes Conservation Authority UTRCA
- Woodstock Chamber of Commerce
- Meet with these groups in May and June 2024

Focus Groups

- Farm Ownership Focus Group
- Rural Living Focus Group
- Oxford County Business owner Focus Group

Project timeline



Thank You




- How can we gain your trust
- What is the path to meaningful community consultation
- How can we support the municipality
- We are fully committed to support the permitting process every step of the way
- What is the process to receive municipal support for the project

Question:
Does the turbulence of a wind turbine has a negative effect on the crops in the area?

Research from Iowa State University suggests that wind turbines located in agricultural fields can have a positive impact on crops growing around them. The study, conducted by a team of plant and soil scientists, observed that wind turbines change the microclimate for crops like corn and soybeans. The turbulence created by the turbines can interact with the crop, possibly increasing evaporation from the crop or moving carbon dioxide down into the crop. This increased movement can also lead to more sunlight penetrating the dense crop canopy, potentially benefiting the plants.
Overall crops grown in wind farms seem to benefit.

“So there are three ways the crop is being ‘fertilized’ from either the air or from the soil or from increased photosynthesis. We measured increased carbon dioxide uptake during the day, but an increased respiration at night,” he said. “But over the course of the day there was more uptake. So as far as the impact of the turbines on the carbon dioxide processes and the photosynthesis process in the near vicinity of the turbines it’s a net gain.”
Here the published article
https://www.extension.iastate.edu/news/iowa-state-university-research-finds-wind-farms-positively-impact-crops

Question
Why is the distance requirement of a wind turbine in Ontario from a 'non-participating house different than from a participating land-owners house?

In Ontario, the difference in setback requirements for wind turbines between participating and non-participating properties is largely due to considerations of impact and consent. Participating landowners, who have agreed to have turbines on their property, are generally more accepting of their presence and the associated impacts such as noise or visual disturbance. In contrast, non-participating property owners have not given such consent, so greater setbacks are required to minimize potential impacts on their properties. This approach is aimed at balancing the development of wind energy with the rights and preferences of individuals living near these installations.

Question
What are the setback rules for wind turbines in Holland and Germany?

In the Netherlands, the setback rules for wind turbines are not strictly defined by a single standard distance. Instead, they are typically determined based on a maximum noise level of 40 dB(A). In practice, a common guideline is to use a distance of about 4 times the height of the mast of the wind turbine. However, this is not a legal requirement, and the actual setback can vary depending on specific local regulations and environmental impact assessments.

In Germany, the setback requirements for wind turbines vary based on the designated noise level protection of the area:

- In "quiet regions" with a noise level of 35 dB(A), the setback is typically between 1,000 to 1,500 meters.
- In "middle regions" with a noise level of 40 dB(A), the setback ranges from 600 to 1,000 meters.
- In "standard regions" with a noise level of 45 dB(A), the setback is usually between 300 to 600 meters.

These distances can vary since all makes and models of wind turbines are not equally noisy. Some German states have their own specific standards.
Both countries approach the issue with an emphasis on minimizing noise impact and ensuring the turbines fit appropriately within the local environment.

Question

Are there any wind turbines near settlements in Holland?

Yes, there are wind turbines located near settlements in Holland. As part of the country's efforts to increase renewable energy capacity, the Netherlands has been actively installing onshore wind turbines. By the end of 2015, there were at least 2,525 onshore wind turbines in the Netherlands, contributing to around 5% of the country's total energy requirement. The Dutch government set a target to achieve an onshore wind capacity of 6,000 MW by 2020, under the Energy Agreement for Sustainable Growth. This target required the addition of approximately 1,000 to 1,500 new onshore wind turbines.
Moreover, the Dutch government's climate plans aim for at least 27% of energy to come from sustainable sources by 2030, with wind energy playing a significant role in achieving this goal. The Netherlands has taken measures to generate energy using onshore wind turbines as a reliable and efficient sustainable energy source. The construction of these wind farms often involves cooperation with local building contractors, and residents can share in the proceeds, reflecting a community-based approach to renewable energy development.
One notable example is the wind farm in Zeewolde, near Amsterdam, where local residents and farmers have become shareholders in the project. This approach has helped to overcome resistance from local residents often hesitant about living next to wind turbines due to concerns about noise and visual impact. In this project, more than 90% of the people in the project area became shareholders, demonstrating a successful model of community involvement in renewable energy projects.
These initiatives illustrate the Netherlands' commitment to renewable energy and the integration of wind turbines into both rural and residential areas, balancing the need for sustainable energy with community involvement and acceptance.

Interesting video about the benefit of a community project where the community can own shares in the windfarm similar to what we propose.
https://www.reuters.com/business/energy/dutch-wind-farm-blows-away-opposition-new-millers-get-stake-2022-08-29/

Question:
Do we need both Cassel and Innerkip to proceed with the project?

No, but in order to reduce the cost of the transmission substation per turbine it would be a benefit for us to add up to 13 turbines in the Cassel area.

Question:
Does noise from the turbines have any effect on humans?

In Canadian research on the effects of wind turbine noise on human health, several studies have found no direct link between wind turbine noise and physical health problems.
A review of scientific literature on wind turbine sound and human health conducted by Canadian researchers Drs. Loren D. Knopper and Christopher A. Ollson found no direct causal link between people living near wind turbines and physiological health effects. The review, which appeared in the Journal of Environmental Health, suggested that reported health effects are likely attributed to environmental stressors rather than specific turbine-related factors like audible noise or infrasound.
Another significant study by Health Canada and Statistics Canada involved more than 1,200 adults living near wind turbines in Ontario and Prince Edward Island. This study, which was launched in response to concerns about wind turbines causing illness, concluded that there was no definitive connection between wind turbine noise and a range of chronic health problems. The study did find a relationship between increasing levels of wind turbine noise and annoyance towards various features of wind turbines, including noise, vibration, shadow flicker, and aircraft warning lights. However, no evidence was found linking wind turbine noise to self-reported or measured health issues such as sleep disturbance, dizziness, migraine headaches, chronic problems like heart disease, diabetes, or high blood pressure, or stress indicators like hair cortisol levels.
These findings indicate that while wind turbine noise can be a source of annoyance for some people, it does not directly cause health problems. The annoyance experienced by individuals may be influenced by factors other than noise, such as visual impact or personal benefit from the turbines.
For more detailed information, you can refer to the original sources of these studies: American Clean Power and Health Canada.

Question:
In Chatham-Kent, there are serious problems with contaminated water?
We have not come across this issue before, but I suppose it may be possible that the soil condition and the layer of bedrock or shale influence the issue. I am not opposed to taking water samples before, during and after construction as we as some time into the operation of the windfarm and let an independent lab analyze if there is any change in the water quality as a result of the wind turbines.

Question:
How many Township meetings have you had at Innerkip?

None so far. We have met with the mayors for East Zorra and Blenheim and will present to them and their council our community consultation plan in March after we know how many landowners in the Cassel area want to work with us. There will be extensive consultation meetings with the communities in Oxford County to ensure we can address all questions in a meaningful way. We will share this plan also with the landowner of Innerkip and Cassel.

Question:
Why not just add turbines to Gunn's Hill?
It is our plan to submit application for extending the capacity of the Gunn's Hill windfarm.

Question:
What do you do with the turbine parts once dismantled?
We are completely responsible to remove the turbines at the end of the contractual agreement with the landowners. We will then use the latest technological re-use and recycling method available at the time to reduce cost and impact on the environment. Our research show that as of 2024, the majority of a wind turbine's components can be recycled. However, the blades pose a particular challenge due to their composite materials which are designed for durability and strength but are difficult to break down and recycle at the end of their lifespan.

Researchers at the National Renewable Energy Laboratory (NREL) are exploring strategies to mitigate the impact of end-of-life wind turbine blades. They're looking into using new materials that are more recyclable, extending the blades' lifespan, and various recycling options, including novel blade materials that are inherently more recyclable.
Carbon Rivers is another example of innovation in this space. They've developed a process to recover clean, mechanically intact glass fiber from decommissioned wind turbine blades. With a recycling process using pyrolysis, they're able to break down the organic components of the composite and separate them from the fiberglass reinforcement. The process not only recovers glass fiber for direct reuse in manufacturing new products but also converts organic components into syngas and pyrolysis oil, which can be used for energy production. This approach aims to make a composites circular economy a reality, creating jobs in recycling and sustainability and moving towards a more sustainable fiberglass industry (Department of Energy).
Additionally, **Veolia North America** has been working on turning wind turbine blades into cement, thus finding value in materials that were once considered unrecyclable. The process involves shredding the blades and using the material to produce alternatives to standard cement or separating out the fiberglass and resin for reinforced industrial products (C&EN).
These advancements show that while challenges remain, significant progress is being made in developing sustainable and circular solutions for wind turbine blade recycling.

Question:
What is the lifespan of the turbines?
Wind turbines have an average lifespan of 25 to 30 years.
As turbines reach the end of their design life, operators may opt for a lifetime extension assessment, which includes theoretical and practical analysis, like on-site inspections and evaluation of design load data. These assessments help determine the maintenance needs and the costs of replacing parts versus the risks and costs associated with continuing operation or decommissioning.
Preventative maintenance is crucial and is typically required two times per year, with the frequency possibly increasing as the turbine ages.

Question:
Where are the parts manufactured?
We are focussing on Vestas Turbines for this project at this time but the final model decision will not be made until maybe a year or more from now.
Vestas Wind Systems A/S, a Danish wind turbine company, has manufacturing plants in multiple countries around the world. These include Denmark, Germany, the Netherlands, Italy, the United Kingdom, Spain, Sweden, Norway, Australia and others. I anticipate the Nacelle to come from Denmark but that may change.
Towers may be coming from Canada and as much as possible all aggregate materials will come from local Oxford County suppliers. We also prefer that much of the labour will also from local communities and Ontario.

Question:
What is the turbine height?
We are investigating 3 turbine types, the V150, the V162 and the new V172 with hub heights of 120 to 165 meters

Question:
What happens when a landowner sign the lease and then later sell the land?
The lease agreement is part of the land and will transfer with the land transfer to the new owner

Question:
What is the rate per kw hour?
The procurement of Ontario energy is a competitive process. As a developer we have to provide a bid-price in the RFP that will determine amongst other factors if we are awarded a project by the IESO. We will not know what this bid price will be until we have calculated the cost of the entire project but I do not anticipate the price to be greater the market price of energy in Ontario.

Question:
Is there curtailment?
Other than the summer month curtailment to protect the bat population from July to September at wind speeds below 5.5 m/second, we have not seen any curtailment at Gunn's Hill. But every windfarm is different and we do not know if there are any curtailment requirements in the procurement of new energy by the IESO. We certainly prefer no curtailment.

Question:
What is the turbine height in Gunn's Hill?
The Senvion MM92 turbines we used in the Gunn's Hill project have a hub height of 100 meters

Question:
Do you have batteries to balance the supply?
No, we are not planning to install a battery plan in this area. It is not our core business at this time

Question:
What is the average number of days would the turbines be running?
There are very few days in the year when the turbines are not operating other that during the annual and semi-annual maintenance work. Turbines start at about 3.3 m/s wind speed and shut down at about 24 m/s. at Gunn's Hill I cannot recall a day when the turbines did not run at all for a full day but we had 2 occasions when the turbines shut down for a few hours because of greater that 24 m/s wind speeds. The turbines will also shut down during ice rain which is also more rare.

Question:
At Shelbourne, some turbines are not running. What would be the reason for this?
Some general reasons why wind turbines may not be running:

1. Low or No Wind: Turbines need wind to operate. If the wind speed is below the cut-in speed (the minimum speed required for operation), turbines will not turn.
2. Maintenance or Repair: Regular maintenance is necessary to keep turbines in good working condition. They may also be temporarily shut down for repairs.
3. Grid Issues: Sometimes turbines are stopped to balance supply with the demand on the grid, or due to grid stability or capacity issues.
4. Environmental or Wildlife Protection: Operations may pause to minimize impacts on wildlife, such as during bird migration seasons.
5. Technical or Operational Issues: Faults or malfunctions in the turbine's components can cause shutdowns until the issues are rectified.

Question:
To clarify, landowners are paid for increase in property taxes?

That is correct. Your property tax bill will show clearly what tax is assessed because the wind turbines is on your land, and we will pay for this tax increase

Question:
What effect does the turbine have on property values?
The impact of wind turbines on property values has been extensively studied, and the findings suggest that the effects can vary depending on several factors such as location, population density, and proximity to the turbines.
Research from Lawrence Berkeley National Laboratory in 2013 examined nearly 7,500 sales of single-family homes within 10 miles of 24 wind facilities across nine U.S. states. This study found no significant impact on property values overall. Further studies in 2015 and 2016 supported these findings, showing no unique impact on the rate of home sales near wind turbines. In a more comprehensive study published by Berkeley Lab in 2023, which included data from 34 states and nearly half a million transactions, the effects on property values were mainly short-term and concentrated in more populated counties, with no significant long-term impacts in rural areas (WINDExchange).
A different study highlighted in Resilience.org found that wind turbines actually increased local incomes by around 5% and house values by 2.6% in parts of the U.S. This study utilized data from counties across the U.S. to assess economic outcomes and isolated the causal effect of wind farm construction on economic outcomes. The increase in property taxes associated with these installations led to benefits such as increased school spending by local governments.
Overall, the consensus from these studies appears to be that while there might be some short-term impacts on property values, especially in more densely populated areas, the long-term effects are negligible, and in some cases, wind turbines may contribute positively to local economies and property values.

Question:
Timeline of end of Feb. 2024 seems too short.
We understand and we will not force the timeline if it is uncomfortable for some. All we ask is that we keep open communications and to please let us know if you want to explore your options. We feel that we have put together a fair option agreement that will provide a good passive income for your family but we do understand that it is not for everyone.
Please let us know if we can get together for further discussion

Question Jan 27, 2024
How many wind turbines are needed in the Cassel area for this project to proceed.
We would like to see 10 to 14 turbines in the Cassel area similar to what we are planning in the Innerkip project cluster. We see the entire project as one project with two clusters of turbines.
It is our plan to apply for interconnection of both project clusters to the 230 KV transmission line in the Cassel area. Our intention is to build the windfarm with about 14 to 18 turbines in the Innerkip cluster and any number of turbines between 4 and about 14 in the Cassel area. So the entire project will have between 20 and 28 turbines. Please recognize that we are in the early stages of the planning.

What is the relationship between the Cassel project and the Innerkip project

It is my anticipation that we do a temporary design freeze in Innerkip layout in February just to give us the opportunity to start drawing plans for the wind park layout that we need during the various approval processes. As soon as we have enough landowners show interest in the Cassel cluster, we will do the same there.

Question

Section 6 of the agreement outlines a number of **limitations to how landowners may use their own property**, outside of the leased area. This was not clearly articulated the other night and is exceptionally important. More details are needed to understand under what circumstances the company would not allow the planting of trees or construction of taller buildings within the distances specified.

I agree that it is very important that we talk about the details in the Option agreement. In principle the only restriction is for the safety of the equipment and the turbines. It would not be possible to build a silo or elevator so close to the turbines that there is risk of contact, or to remove an access road to the turbines that allow us to service the turbines. I the 7 years that we have operated the Gunn's Hill windfarm we have never objected to any farm building expansions in that area. Trees and new barns do not interfere with the turbine operation. The 550 meter setback relates only to existing, non-participating houses as a noise buffer. There is no distance requirements to barns or trees. But I see your point about section J) a and b (we can talk about this is greater detail). It is never our intention to restrict the use of your land and there is little that even can interfere with the operation on the turbines.

Question – location of access roads

During the information session you indicated that the company would work with the landowner to determine the most appropriate location for access roads. Section 21 states that consultation would happen, but also very clearly states that the final decision rests solely with the company.
Please allow me to clarify:
with 'access roads' in section 21 we mean temporary roads to allow us to construct the wind farm, deliver materials etc. These temporary access roads will be removed at the end of construction.
Permanent or "non temporary access roads' in section 22 are those that remain in place after construction to provide access to the turbines for maintenance.

The Option agreement states in section 22 c the following: *The location of the non-temporary main access roads will require the Landowner's prior written consent, which consent shall not be unreasonably withheld or delayed.*

So, if we need to construct temporary roads that will be removed after construction we will be *permitted to construct when necessary up to five (5) meter wide access roads to the Wind Energy Sites on the Leased Lands at the Company's expense The decision for the location of the access road shall be made in consultation with the Landowner. However, it is understood that the final decision for the location of the access road shall be solely at the discretion of the Company. The Company shall make all reasonable efforts to accommodate the Landowner's preference. The Company has the right to widen corners to allow delivery of the wind turbine components and crane equipment (this includes the right to improve visibility splays and existing roadways/laneways). The roadways/laneways will be so constructed so that the level of the final surface does not deviate substantially from adjoining fields/land. The Company will be responsible for repairing all damages caused during construction and maintaining these roadways and laneways in accordance with usage.*

But for the permanent access roads we will seek the landowners approval and the land owner has the right to not approve our proposal.

The Company covenants and agrees that, where practical, and without materially increasing the Company's development costs, the roads will be planned by the Company taking crop and soil management concerns and other property development concerns of the Landowner into consideration. Best efforts will be made to use temporary access roads between the main access roads and individual Wind Energy Sites. These temporary access roads will be removed after construction of the Wind Energy Sites to permit return to agricultural use. The location of the non-temporary main access roads will require the Landowner's prior written consent, which consent shall not be unreasonably withheld or delayed.

Question
How deep of a base is needed for a turbine 165 meters tall

I am glad to come by next week to show you the foundation plan for the Gunn's Hill turbines we built. There the foundation is about 3 meters underground. They are called pyramid foundation and are not very deep.
https://m.youtube.com/watch?v=Q2o5P-6zm6Y
Here is a short video of the foundation I described.

Question: Land usage for energy production

How much farmland is used to produce energy from the various energy sources?
I have listed below the amount of land each of the major energy sources require per MW of capacity. For our proposed windfarm we would need about 0.5 acres per turbine plus the average access road (often using laneways already in place). With a 6 to 7 MW turbine that is less than 0.2 acres per MW capacity, the lowest land use of all energy projects.

Energy Source	Land Use (acres/MW) Range	Source(s)
Nuclear	0.83 acres/MW	World Nuclear Association
Coal	7 to 12 acres/MW	U.S. Energy Information Administration
Natural Gas	2 to 4 acres/MW	U.S. Energy Information Administration
Garbage Incineration	2 to 4 acres/MW	International Renewable Energy Agency
Solar	2 to 4 acres/MW	National Renewable Energy Laboratory
Biogas	1 to 2 acres/MW	U.S. Environmental Protection Agency
Wind	0.25 to 1 acre/MW	National Renewable Energy Laboratory