On **Tuesday, 21st June 2011**, ten years after Chief Joe Hare formed a vision to establish economic development initiatives that would be respectful of our obligation to Mother Earth, M’Chigeeng celebrated the groundbreaking ceremonies for the Mother Earth Renewable Energy Wind Project.

“**Sun and wind can be harnessed without preventing us from using the land in other ways at the same time.**”

This sentiment was echoed by Elder Almajean Migwans that lead the ceremony on the Bluff, as we thanked the animals, plants and spirits for allowing this Bluff to be used to strengthen the community of M’Chigeeng.

When asked what he has learned over the years? He did not say so, but being a pioneer has been tough.

Chief Joe Hare’s main lessons were:

“**Have a vision, pursue it with a whole lot of patience and do not give up.**”

“**Keep people apprised, share the benefits and help raise living standards.**”

When asked how did M’Chigeeng keep on?

Three reasons:

- Economic, they need to earn a living from their lands while being respectful of Mother Earth. This is demonstrated by the organization they have set up to manage the project – M.E.R.E (Mother Earth Renewable Energy) Inc.
- Employment, they have set up a series of training programs with the Sault College to grow the skills base in the community. There are more plans to harvest the wind and M’Chigeeng intend to be able to provide trained and skilled workers to help them to succeed.
- Self reliance, Chief Joe Hare is determined to show young people that when M’Chigeeng set their mind to achieve something they can get it done, provided they are willing to learn and to work. M.E.R.E. is the largest project M’Chigeeng have yet done and they are driving it themselves
- The Opening Ceremonies were a great success!!! A big thank you to all those who helped and participated!

On behalf of the Assembly of First Nations, and the National Executive, we extend our congratulations to M’Chigeeng First Nation on the occasion of the ground-breaking ceremony for the Mother Earth Renewable Energy (M.E.R.E.) wind project.

This is truly an exciting time for Indigenous peoples in Canada – a time where energy development and innovation is creating tremendous opportunity. First Nations across the country join you in seeking fundamental change that unlocks the full potential of our citizens, communities and economies.

First Nations are beginning to lead the way in identifying, developing and implementing sustainable, responsible alternatives in energy production. I commend the leadership and all of the citizens of M’Chigeeng on this great day.

Kleco. Kleco.

Respectfully,

Shawn A-in-chut Atleo
National Chief
Navigation Beacons

The turbine will be equipped with a strobe obstruction light system that illuminates day and night to warn aviators. This is in compliance with Navigation Canada and Transport Canada regulations. There are two intensity settings. During the day the lights will flash brightly, approximately 20,000 candle power, strobing once every 3 seconds. During night time the color changes to red and the output power is cut to a tenth. The light mounted on the top of the turbine’s nacelle and is visible from all directions.

Traditional lamps use xenon bulbs to make the strobe flash, similar to camera flash lights but much bigger. The xenon bulb is about the size of a cigar. Newer lighting technology involves LED lamps, which are now showing their ability to last longer and consume far less power.

Modern lighting systems allow strobing to be coordinated between adjacent towers, so that they all flash at the same time. In other cases, Navigation Canada specifically requires this feature to be deactivated to allow the lights to act independently. We do not know yet which Navigation Canada will say regarding the two turbines at the MERE project. Lightning can be a strobe killer and these lights are built tough to withstand the electrical shock. But they don’t always survive.

These lights will be visible from the town, much in the way the lights on top of the water tower are visible.

How to Build a Foundation

It’s simple. Dig a hole, about 3 meters deep. Build a large form in the shape of a pie. Insert about 50 tons of steel reinforcement bars. Insert a base structure in the middle and tie it to the rebar. Insert some conduits to carry large cables for the power connections. Insert copper and steel bars into the surrounding ground to create an effective grounding. Then back-fill with 450 cubic meters of concrete, i.e. about 100 concrete trucks full. Shake and vibrate the concrete to eliminate air pockets. Back fill with earth and grade up to the top of the base structure. Then wait 28 days for the concrete to cure and you are done. Easy. But make sure you do all this in decent weather because foundation construction in winter is no fun. And don’t try this in any event unless you know what you are doing, because lots can go wrong.

What can go wrong? Bad concrete – creates inadequate connection of concrete to the rebar, inadequate connection to the base structure – the turbine will shake loose. Differential settlement underneath the foundation – the turbine will tilt! Poor grounding – the electrical equipment will be unstable.

Inadequate drainage – the foundation will float and possibly overturn in strong wind.

To overcome these issues Enercon has onsite engineers and M’Chigeeng has an onsite engineer to oversee every step of the construction process. Challenges for M’Chigeeng are the grounding system because the hard rock that the foundations are built on is not good as a conductor for lightning shocks or ground faults. This will require extra care in resolving, and will be costly. Other than that this is a normal foundation deployment, built by a company with a lot of experience with Enercon foundations (Rankin Construction). Enercon foundations are more expensive than typical turbines because the company’s turbine design is heavy and foundation is bigger and more fortified with rebar than typical. Enercon has not been caught with inadequate foundation designs as have other manufacturers probably because of the culture of prevention and caution that runs throughout the company. They work to a formula intended to deliver customer satisfaction and they do not take chances.
How Are Turbine Blades Made?

This is somewhat of an industrial secret. Few blade manufacturers will let you take picture inside their blade plants. But here is the general idea:

Wind turbine blades are hollow and usually made of a wood and glass fibre composite structure. A person can stand inside the blade at the thick end. To achieve the complex aerodynamic shape the process involves a shell moulded in two halves, with a joining shear web inserted between them as they are bonded together. The shear web acts like a beam down the middle of the blade to stop the upper and lower surfaces from collapsing toward each other – it gives stiffness to the wing shape. Typically wood comprises 70% of the mass of the blade, with the remainder comprising glass cloth, epoxy resin and metal inserts to create the bolted mounting joint at the root end of the blade. The types of wood include mahogany, birch, cork and recently bamboo. The advantages of the wood include high strength/low weight, low cost and high tolerance for flexure because these blades are constantly flexing under wind gusts.

When fabricating the blades on the mould, the mould uses a vacuum system to attach the wood, glass fibre and epoxy glue to the mould. During the process of applying the epoxy glue (mostly by hand application), a large amount of heat is generated by the glue as it cures and this heat is carried away by a water cooling system built into the mould, to keep the materials at safe temperature.

Connecting blades to the turbine involves large bolts – the size of a man’s fist – to be inserted into the turbine hub and attached to the metal hub structure. The blades are assembled on the ground, inserted into a metal hub structure called the rotor assembly, and bolted on. The rotor is lifted by a large crane and married to the nacelle up to the top of the tower. The point of attachment of each blade to the rotor is a large steel ring mounted on a large bearing and the ring is allowed to rotate. This gives the turbine more control over wind gusts as the blade angle (“pitch angle”) to the approaching wind can be altered to create more or less wind force and therefore power to the generator. When it is time to stop the generator, the blade angle is rotated 90 degrees to become a wind brake and the rotor will come to stop in a few seconds.

Blades experience wear and tear. They require annual inspections and occasional maintenance, particularly on the surface to prevent pitting and erosion of the outer gelcoat surface. The occasional hunter’s projectile (commonly known as a bullet) will find its way into the blade purely by accident, mostly, and this damage must be repaired. Lighting strikes can cause surface damage which needs to be attended to, to prevent moisture from entering into the sub-surface layers of wood and glass fibre.

Blades turn slowly, about 15-25 revolutions per minute. This means that each blade makes a full rotation in about 3 seconds. Looks fairly slow and majestic from a distance – but actually the blade tips are moving pretty fast. The formula for the perimeter of a circle is Pi X Diameter. If the diameter is 80 meters, then the blade tip is travelling 250 meters every 3 seconds, or 300 km per hour!
We are pleased to add the M’Chigeeng Wind Farm to our list of accomplishments. Rankin greatly appreciates the opportunity to work in more remote areas and values the efforts of everyone who assisted with the completion of the project. We would like to thank the local labourers for their tireless efforts, the local band office for their hospitality, Lafarge, Tyler Corbiere and his crew at Corbiere Brothers, Lloyd’s & Son and McCann Concrete for their dedication, professionalism and timely assistance, local businesses for their accommodating attitude and all local residents for helping all of us feel welcomed.

This project has presented us with several interesting challenges which needed innovation and the assistance of local labourers and companies. Below is a list of some of the challenges encountered and how they were resolved:

- The work site was remote and far from the Rankin Construction head office
- Through careful planning and multitasking, we were able to minimize down time due to lack of supplies, equipment, etc
- Local businesses assisted whenever possible
- The beauty of the area was enjoyed greatly by Rankin workers staying in M’Chigeeng
- It is difficult to have experienced workers brought to the island
- Rankin hired local labourers with assistance from the band office
- The local labourers were found to be both motivated and a pleasure to train
- With the help of Dietrich Limited, the rebar for both foundations was completed on schedule due to their efficient work. They were able to install approximately 53 tonnes of rebar into each foundation in the span of one week
- Lafarge supplied 450m³ of concrete for each foundation at a continuous rate
- During the second day of concrete pouring, the rented concrete pump truck suffered a burst hose and was unable to continue
- A substitute concrete pump truck was supplied by McCann until the appropriate replacement arrived. This prevented severe problems involving the concrete drying before the pour was completed
- Lafarge was able to redirect loads to other areas so concrete would not be wasted

**Mutual Benefits**

Rankin Construction and M’Chigeeng have both benefited from an amicable working relationship. Rankin has tried deal exclusively with local businesses whenever possible. We can list some of our contributions as:

- Hiring of local labour to work on the jobsite
- Used approximately 900m³ of concrete supplied and transported by the M’Chigeeng Lafarge branch
- Relied on approximately 250 loads of backfill from Lloyd’s & Son
- Relied on local contractors such as Tyler, Curtis and the entire crew of Corbiere Brothers
- Make use of local suppliers as much as possible
- Enjoyed staying at local accommodations such as Lillian’s Campgrounds
- Attended local community events whenever possible
- Enjoyed the fine local restaurants
- Took part in recreation in the area during personal time
- Purchased groceries locally
- Purchased gas and transportation services from local stations

Rankin Construction would like to thank M’Chigeeng and everyone who made this project a success, both by contributing directly to the project as well as welcoming us and assisting in more indirect ways. We hope that this project was as rewarding for you as it has been for all of us. We look forward to any future endeavours that may arise.

**About Rankin and Wind Energy:**

For over ten years, Rankin Construction has been a contributing to Ontario’s supply of renewable energy. Our history with wind turbines began in 2002 when Rankin constructed the roads and foundations for the first commercial scale wind farm in Ontario, the Huron Winds project. We have remained at the forefront of the industry with over a dozen projects completed in Ontario. Rankin is called upon for complex jobs where innovation and planning are essential. We have experience constructing projects requiring piled foundations and can make use of our experienced in-house pile driving team. Rankin also constructed the Kent Breeze Wind Farm which made use of the first GE 2.5MW wind turbines in North America and was the first wind farm permitted under Ontario’s new Renewable Energy Approval Process.
Transportation Route & Issues

Transportation of wind turbine equipment is an element of the whole process that does not get enough press, yet it involves some of the greatest challenges in wind farm development. The size of wind turbines and their components, and the growth of the wind industry are effecting the transportation sector.

The wind industry has helped develop the industry of super-load road transportation. Ten to Fifteen trucks are needed for each load.

- The current size and scale of wind turbine components presents a daunting challenge to the trucking industry.
- That challenge is increased by the fragmented regulatory system under which the trucking industry operates, with individual provinces and municipalities determining not only the routes extra large trailers must take, but also, through expenditures on maintenance, the condition of the roadways on which they travel.
- While railroads and barges can provide attractive and energy-efficient alternatives for part of a turbine component’s journey, trucks will likely be needed for the balance.

Bottom line: wind project developers need to consider transportation early in making wind farm decisions.

To keep the public notified of the transportation process around we will be updating the public using the M’Chigeeng website and local newspapers as to the dates and times that the turbines will be delivered. This will be done to aid in pedestrian planning and help minimize any delay and inconvenience that may be caused by the super load delivery.

Route report. So far we forecast:
The large crane will arrive first in a convoy of 21 flat bed trucks and floats. Then the turbine components, approx 12 trucks per turbine.

Delivery of Turbine #1 will occur starting on Wednesday, Oct 5 and will likely be finished on Monday Oct 10.

Turbine #2 follows a week later.
From National Post Sept 24

Re: Rural Family Sues Energy Company, Claiming Ill Effects From Wind Turbines, Sept. 22. When I became the acting Medical Officer of Health for the municipality of Chatham-Kent, Ont., little did I know that I would be swept headlong into controversy about harnessing the wind. Three years ago I was asked to help make sense of the conflicting information about the effects of wind turbines on human health. After extensive research, I found no scientifically credible evidence that wind turbines eroded human health.

It is, admittedly, a complicated topic. Wind turbines do not produce unique sounds in terms of intensity or characteristics. There is also no convincing scientific evidence of an epidemiologic link between wind turbine sound exposure and health problems.

However, a very small number of people believe otherwise. Wind-power opponents continue to make claims about sickness caused by “industrial” wind turbines, a term that sounds more threatening. However, 10 reviews have confirmed that there is no evidence of direct adverse health effects from wind turbines, when sited to comply with Ontario’s noise regulations. Furthermore, all the power-generation alternatives except solar energy are clearly worse. According to a study prepared for the Ontario government, coal plants cause nearly 250 deaths and more than 120,000 illnesses each year in the province.

So while I am sympathetic to concerns raised by local residents and agree that projects must be sited in a way that minimizes impact on local residents, when it comes to energy choices for healthy communities, I am confident that we shouldn’t be tilting at windmills.

Dr. W. David Colby, acting medical officer of health, Chatham-Kent, Ont.

The Equipment

- 1 - LR1400/2W Leibherr 440 ton narrow track crawler. This is the crane that does all the big lifts. It will come to site on 15 transport loads 5 of them being oversize. These will start to arrive on Monday and last load will be delivered on Wednesday.
- 1 – Demag 4425 120 ton AT this will be for offloading tower parts. It will come on one transport truck and the crane will drive here separate. This will be delivered on Monday.
- 1 – Damg 90 ton AT, this will be for tailing the parts as they are lifted, it will come on one transport truck and the crane will drive here separate. This will be delivered on Monday.
- 1 – 45’ man lift, to be delivered on a float. This will be delivered on Monday.
- 1 – 9500lb telescopic forklift, to be delivered on a float. This will be delivered on Monday.

There will be 2 super b loads of wood mats to put the tower parts on and support the crane. These will delivered on Tuesday.

Chi Migwech!!

M’Chigeeng First Nation and the Mother Earth Renewable Energy would like to extend an authentic public Thank You to all of the land owners that have supported the construction phase of the Wind Project over the past several months. We want you to know that your positive communication and shared vision for this sustainable development project are greatly appreciated!

1. Loretta Debassige
2. Ray Corbiere
3. Randolph Paul
4. Ron and Carol Sheppard
5. Colin Bennett
6. Robert Semeniuk
7. Nickel Belt Boom Truck Ltd
   Guy Blais