FOX ISLAND WIND PROJECT

RISK MANAGEMENT PLAN

Version 2.0
08/15/2021

Disclaimer(s): This RMP is specifically for the Fox Island Wind Project

VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	Colbey, Will, and Heidi	7/31/2021	Project Manager	7/31/2021	First Draft
2.0	Colbey, Will, and Heidi	8/15/2021	Project Manager	8/16/2021	Revisions to the Original draft, updated information.

TABLE OF CONTENTS

1 INTRODUCTION

1.1 PURPOSE OF THE RISK MANAGEMENT PLAN

Risk is defined by the Project Management Institute as an uncertain event or condition that, if it occurs, has a positive or negative effect on the objective of a project. (PMBOK, 124). Risk Management exists to provide teams a way to handle and prepare for risk. "The objectives of project risk management are to increase the probability and/or impact of positive risks and to decrease the probability and/or impact of negative risks, to optimize the chances of project success." (PMBOK, 124). The Risk Management Plan is developed by the project manager and their team at the beginning of the project and is monitored consistently throughout its lifecycle. This document will outline the approach for identifying, analyzing, planning, implementing, monitoring, controlling, and reporting risk. The risk is directly relevant to the Fox Island Wind project and has been outlined specifically for Fox Island.

1.2 THE PROJECT BACKGROUND

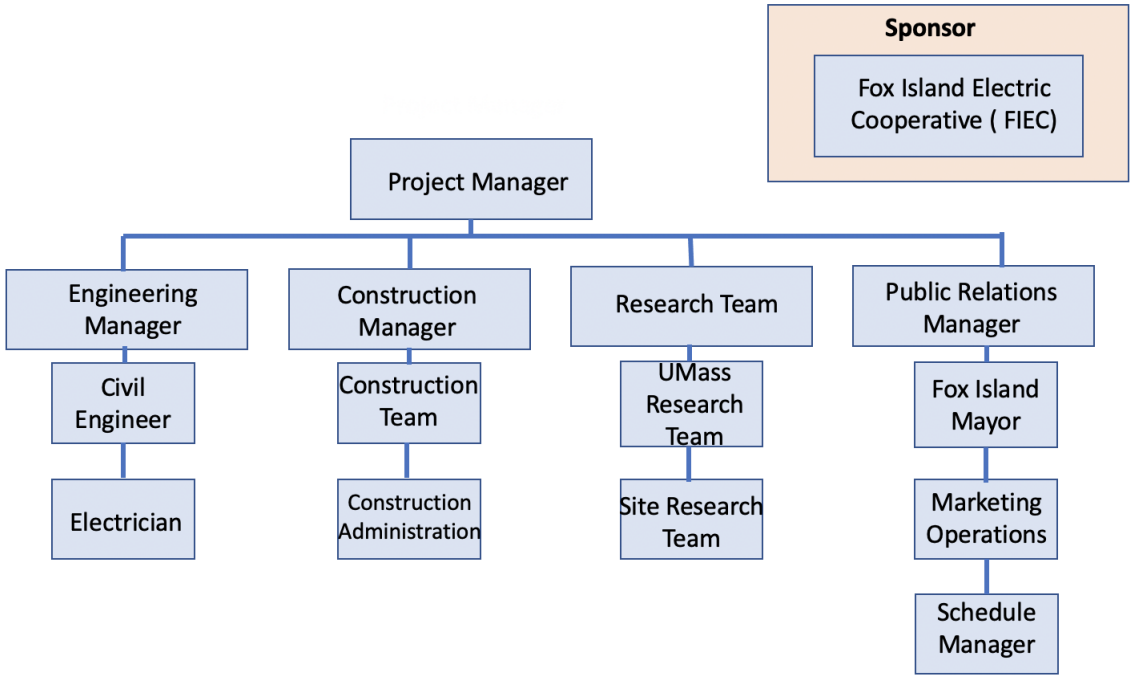
The Fox Winds project came about due to a need for a sustainable solution for electricity for the island residents. The electricity on the Fox Islands was three times higher than the national average, which threatened the livelihood of the full-time residents. With Fox Island being just one of fifteen remaining year-round island communities, it became extremely important to find a solution to reduce electricity prices. Research began back in 2001 led by Dave Folce. The University of Massachusetts Renewable Energy Research Lab studied the wind speed, wind frequency, and direction in specific areas on the idea to see if a wind solution was sustainable. Once that data was collected, Dave Folce decided to bring in a Project Manager, George Baker, to support and operate the project. George Baker led the charge in terms of rallying the resident's support and ensuring the benefits would outweigh the negatives of the turbines.

By reducing the electricity costs for the island, the project would allow residents to remain living there full time. Without a reduction in costs, the sustainability of these year-round communities. The Fox Island Electric Cooperative (FIEC) also needs to reduce maintenance costs of the underwater electric cable, to continue serving the communities. The solution of wind turbines would suffice in cost reduction for residents and the FIEC.

1.2 THE PARENT ORGANIZATION BACKGROUND

The parent organization to the Fox Island Wind project is the Fox Island Electric Cooperative. The Fox Island Electric Cooperative has been around since the early 1900s. They have been the transmission and distribution company for many of the islands up in Maine. In relation to Fox Island specifically, they own ten miles of submarine electric cable which provided electricity to the island at hand. As they owned this electric cable, they engaged transmissions as a regulated monopoly. Since they were T&D, they did not provide electricity itself, just simply provided and pushed it to the islands. The FIEC has the authority to approve any electricity project but wanted to focus strongly on the communities it served, such as Fox Island. They saw the need to significantly reduce the cost of electricity for year-round residents, in order to support their community and keep it a sustainable option.

1.2 THE PROJECT ORGANIZATION STRUCTURE



2 RISK MANAGEMENT PROCEDURE

2.1 PROCESS

A risk is an uncertain event or condition that if it occurs has a positive or negative effect on one or more project objectives. This risk management plan will describe how risk management activities will be structured and performed (PMBOK, 2017).

Many of the risks will be identified before the kickoff of the project while most of the risks will be identified during the lifecycle of the project. The Fox Islands Wind Project's project manager will be responsible for managing risks but anyone associated with the project can identify and report risks to said project manager.

All stakeholders will be involved in helping to identify risk. Although the project manager will lead the charge, we also find it important to bring in experts around many of the areas we need to cover such as; permits, construction, turbines, wind, etc. We will identify risks by utilizing interviews and reviewing similar projects such as the wind project in Cape Cod. Through interviewing experts and analyzing projects that are similar, we aim to have many possible negative impacts and positive opportunities.

2.2 RISK IDENTIFICATION

Risk identification is the process of determining risks that could potentially prevent the project from achieving its goals. Each determined risk needs to be documented and its attributes analyzed.

The Fox Islands Wind Project's project manager has the responsibility of managing the project's risks and instructing the team as to what constitutes a risk and what could potentially impact the project. Risk management updates will be scheduled during each regularly scheduled project meeting. The project team will discuss any known or potential risk and these will be reviewed by the project manager.

The project manager will then determine whether or not said risks warrant any further evaluation, quantification, or risk response development. All risk factors or events should be brought to the attention of the project manager using email or some form of written communication to log the timeline. The project manager is responsible for documenting risks and risk behaviors in the risk register and notifying any and all stakeholders of any new risk register entry.

2.3 RISK ANALYSIS

Risk analysis will identify and assess factors that could jeopardize or derail the Fox Islands Wind Project's success. Assessment of risk involves measuring the probability of these risks and then estimating the impact the risks have on the Fox Island Wind Project.

The risk register is the repository where outputs of the Fox Islands Wind Project's risk management process are recorded.

The risk register contains the ratings for the risk impact. For each of the categories, the impact assessment should be made by considering cost, scope, schedule, and quality. (phe.gov)

Catastrophic (A)

- Regulatory/ Compliance issues
- Inability to validate data
- Withdrawal of product manufacture
- Faulty product
- Production delays
- Technical miscommunication
- Security/ confidentiality breaches

Critical (B)

- Non-compliance resulting in process degradation
- Security finding requiring immediate corrective action to continue operations
- recurring safety violations
- Production

Moderate (C)

- Security findings requiring a corrective action plan
- Production error that may pose indirect consequences

Minor (D)

- No regulatory action anticipated
- No compliance impact anticipated
- No evident security threat anticipated minor errors in completed policy and procedures

- Production errors containing quality systems and opportunities for improvement

Negligible (E)

- No regulatory or compliance violations
- No security or confidentially element affected
- On-time production
- Validated experiments
- Clean product
- Properly executed communication

Link to risk register-
https://docs.google.com/document/d/1JpQ5vfp1UIsn5L-B4GxE6SUsaJmbXBZ4y-hioxH7WZU/edit

2.3.1 Qualitative Risk Analysis

As we know, a qualitative analysis prioritizes project risks using a rating scale. Risks are then scored on their probability or likelihood of occurring and the impacts on the project's objectives should they occur (Goodrich, 2018).

For the qualitative risk analysis to begin, the project manager will undergo the data gathering process through interviews and be able to assess the risk parameters as well as impact. the project manager will not only interview all parties involved but also utilize past projects in order to understand where other similar projects could have been improved upon for a more successful outcome. It is important to understand the hurdles that the team will face, by analyzing all parts of said project.

Risk impact is the estimate of the potential losses associated with the risk. The risk impact table explains the categories and terms defining the risks. We have generated a scoring system that is defined below. Scores are given to the probability, cost, schedule, and performance. the score associated with the risk for pre and post-mitigation, will be calculated as follows: (Probability)*(Highest-Impact). The highest score risk can have is 25. For example, if a risk has a high probability, low cost, medium schedule, and high performance, the calculation would be (4*4) or (probability)*(performance).

The risk impact matrix is to be developed post-qualitative risk analysis and prior to deciding which risks will have a quantitative risk analysis done.

	Probability of Occurrences	
Definition	**Meaning**	**Value**
Very High	● Occurs frequently ● Will continue unless action is taken	5
High	● Occurs less frequently if action is taken ● Issues identified with minimal research ● Process and performance failures evident to trained team members	4
Medium	● Occurs sporadically ● Issues discovered during focused reviews	3
Low	● Unlikely to occur ● Minimal issues discovered during focused reviews	2
Very Low	● Highly unlikely to occur	1

Public Health Emergency.
http://www.phe.gov/about/amcg/contracts/documents/risk-management.pdf)

Within the Risk Register, we have scored each risk based on Probability, Cost, schedule, and performance. All risks with a score of 10 and higher, will be looked into sooner and take priority. Those are also the risks that we will provide quantitative risk analysis for. All other risks do not need to be looked at right away due to the low impact.

Likelihood		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Catastrophic 5
	5 Almost certain	Moderate 5	High 10	Extreme 15	Extreme 20	Extreme 25
	4 Likely	Moderate 4	High 8	High 12	Extreme 16	Extreme 20
	3 Possible	Low 3	Moderate 6	High 9	High 12	Extreme 15
	2 Unlikely	Low 2	Moderate 4	Moderate 6	High 8	High 10
	1 Rare	Low 1	Low 2	Low 3	Moderate 4	Moderate 5

2.3.2 Quantitative Risk Analysis

Quantitative risk analysis is an analysis of risks that further breaks down the highest priority risks with a numerical rating. It quantifies the possible outcomes for the project and assesses the probability of achieving specific objectives while allowing a decision to be made in the midst of uncertainty; this allows for achievable cost, schedule, and scope targets (Goodrich, 2018).

Based on the results from the risk register we agreed to take any risk with a score of 10 or higher and put that into the quantitative risk analysis. these risks that are quantifiable will have a percentage likelihood of occurrence and actual dollar values of the cost if it was to occur. With all the information at hand, there will be a better understanding of risk exposure and responses to mitigate.

The quantitative risk analysis will also allow us to determine our contingency reserve so that we are prepared for the unknown. The team will utilize the Monte Carlo method in order to build models of possible results but substituting a range of different values. By using this method, the team is provided with a comprehensive view of what may happen and the probability of it happening. based on those results, the project manager will dictate the contingency reserve. By setting aside additional funds and/or time for uncertain events/risks, the project manager increases the predictability of project outcomes. Based on

the quantitative analysis, we are requesting additional leeway in the schedule by one additional month and an additional $100,000.00 in terms of budget. We think that by having this in the contingency reserve we will have a successful project outcome.

2.4 RISK RESPONSE PLANNING

It is the responsibility of the Fox Islands Wind Project's project team to select a response for each risk. The project team will need the best assessments of the risks to select the proper response. Risk mitigation is a risk response strategy whereby the Fox Islands Wind Project team will act to decrease the probability of occurrence or impact of the threat. One way of evaluating these mitigation strategies is to multiply the risk cost by the probability of occurrence; these calculations will be given serious considerations. Some possible responses are as follows:

- Avoidance- changing the project to avoid the risk
- Transference- shift the impact of a risk to a third party (a Fox Islands Wind Project contractor)
- Mitigation - reduce the probability and/ or impact by taking early action
- Acceptance- accept the risk and not take immediate action
- Deferred - determine how risk should be addressed at a future time

(www.phe.gov)

2.5 RISK RESPONSE IMPLEMENTATION

A risk response should be implemented as soon as risks are identified and categorized.

- A contingency budget will be set aside in lieu of construction delays
- A contingency timeline will be organized to handle delays
- All Fox Islands Wind Project team members are trained and prepared to handle HR issues; knowledge transfer, resource planning, and scheduling
- The quarry construction site is prepared for disaster recovery
- Maintain idle equipment in the event of equipment failure
- Stock ample inventory
- Establish processes and procedures for recording risks and managing information
- Train all employees to deal with situations that might occur
- Develop capabilities that can be used when risks occur

(Spacey, 2017)

2.6 RISK MONITORING AND REPORTING

As the project lifecycle's progress and activities are completed risk factors and events will be assessed to decide if any risk trigger events have occurred as the project has moved forward. These triggers need to be gauged and documented, determining them to be either a threat or a negligible event. All of this information will be documented in the risk register and the Fox Islands Wind Project's project manager will be notified immediately (www.phe.gov).

3 ROLES AND RESPONSIBILITIES

Stakeholder	Role	Responsibilities (How are they engaged in risk?)
Project Manager	Project Manager	- Responsible for collecting, communicating, and managing project risks.
Fox Island Electric Cooperative (FIEC)	Project Owner	- Responsible for identifying risks in the feasibility study. - Available to support project risk management should the project manager need help.
General Manager of FIEC	Project Sponsor	- Has ultimate control over project and FIEC operations. - Decides whether or not to allocate more or less of FIEC resources to risk management.
University of Massachusetts Renewable Energy Research Laboratory	Wind Research	- Responsible for identifying environmental risks while studying wind speed, direction, and frequency at Swanson's Quarry.
Residents	Community Support	- Responsible for expressing the community's opinions, wishes, and needs for the project. - FIW must gain community support to begin construction.
Vermont Public Power Supply Authority	Business Partner	- Holds a sale and purchase agreement with FIEC. - Pays for the project's operating and financing costs.
GE	Supplier; Engineering; Construction	- Responsible for providing resources for shipping materials and constructing the turbines.
The Rural Utilities Service (RUS)	Project Finance; Lender	- Lends the loan providing financial support to the project. - Negotiates the parameters that allow for mutually satisfactory financial solutions.

Responsibilities Assignment Matrix

Task	Project Manager	FIEC	Dave Folce	UMASS Renewable Energy Research Laboratory	Residents	VPPSA	GE	RUS
Wind Study	I	I	I	R				I

Feasibility Study	A	R		C			C	I
Community Meetings and Voting	R	A	I		C		I	
Engineering	I						R	
Construction	A	I	I		I	I	R	I
Closeout	R	A			I	I	C	I

*R - Responsible, A - Accountable, C - Consulted, I - Informed

4 BUDGETING

After further risk analysis, amounts taken from the $9.5 million 4.25% interest loan will be set aside for a contingency reserve and a management reserve. We believe that by putting a total amount of $1,000,000 in funds into the contingency reserve, we should be able to have enough. We also believe that an additional one month in terms of the building schedule will also be sufficient. Should a foreseen risk occur, the contingency reserve will be used to pay for it. This amount will be representative of market research of similar wind turbine projects and their risk work. Should an unforeseen risk occur, the management reserve will pay for it. However, if reserves are emptied, then risks will be paid for by money generated from REC sales.

5 TIMING

The Risk Management Plan will be reviewed and revised after key events. The planned key events for this project include:

- The completion of the University of Massachusetts Renewable Energy Research Lab wind study,
- Site is purchased,
- New electrical cord connecting the island to the mainland is installed,
- FIEC finishes its feasibility study,
- George Baker leaves HBS to focus on Fox Islands Wind Project,
- Community meetings discussing the project,
- Ratepayers vote for or against authorizing the FIEC to proceed with planning,
- Construction commences,
- And turbines begin operating.

The project manager will decide when the risk management plan may need to be reassessed throughout the project. Key stakeholders may also make change requests to the Risk Management Plan. As outlined later in communication, there will be a meeting once a month to address current and new risks.

The Risk Register will be reviewed and updated iteratively when new risks emerge and/or changes to a risk's potential impact and/or likelihood on the project occurs.

6 RISK CATEGORIES

- External: risks that are results of external environmental factors.
    - For instance, risks that are government-related, regulatory, environmental, and market-related.
- Management: Risk relating to the planning, organizing, directing, and control of the project.
    - Includes schedule, budget, and resource risk.
- Commercial: risks related to securing and paying for finances.
    - For instance, the risk a debtor may not be able to pay its debts, risks associated with contracts, risks that the project will not be profitable, etc.
- Technical: any risks related to technology and equipment used in the project that could affect project and product functionality and performance.
    - Includes risks from requirements specification, hardware, technology and software, performance reliability, etc.
- Temporary: risks that are specific to certain tasks or subtasks or timing of the project
- Unique: risks unlike the other categories of risk.

7 STAKEHOLDER RISK TOLERANCES

The project's stakeholders are willing to take on considerable risk. This is because the majority of the project's stakeholders have personal ties to the island and are more interested in longevity and reducing the expense of living on the island, and constructing turbines on the island appears to be the best way of achieving this. Risk tolerances should remain consistent throughout the project. However, should the majority of island residents unyieldingly oppose the construction of the wind turbines, project risk may be so overwhelming that stakeholders will not accept the risk.

8 COMMUNICATION: REPORTING FORMATS

The project manager will use a risk assessment matrix and risk register to report risks to key stakeholders. The risk matrix will use the estimated likelihood and consequential severity of identified risks to prioritize them in the risk register from highest to lowest. The risk register will document similar information to the risk matrix (i.e. likelihood, consequential severity, and prioritization level). In addition to this information, the risk register will assign risk identification numbers (R001 being the highest priority risk), risk descriptions, control techniques to be used (i.e. avoid, accept, transfer, and mitigate), descriptions of the control technique measure, risk ownership, status (i.e. open, complete, and in progress), latest review dates, adjustments, and close dates.

Risk documents will be shared virtually among project team members (via Microsoft teams or Google Drive) allowing for review throughout the project. The project manager will use his best judgment in communicating updates to the risk matrix and the risk register to stakeholders via email or holding meetings. If informing a stakeholder of changes to the risk assessment matrix or risk register may hinder the project's success, then the stakeholder should not be informed

unless the stakeholder requests. Team members, other than the projet manager, should refrain from reporting information on the risk documents to stakeholders.

The project manager will also hold weekly meetings with all of the stakeholders to go over and assess progress. This will allow the team to know exactly the upcoming actions needed as well as touch base on the progress that has been made. Meetings specifically to address current risks and uncover new risks, will be held once a month. Due to the length of this project, there is likely to be new risk uncovered, therefore we want to dedicate time specifically to the risk factor.

9 RISK MANAGEMENT PLAN APPROVAL

The undersigned acknowledge they have reviewed the **Risk Management Plan** for the Fox Island Wind Project. Changes to this Risk Management Plan will be coordinated with and approved by the undersigned or their designated representatives. THose required to sign are members of the Fox Island Electric cooperative and the project manager.

Signature: _____ Date: _____
Print Name: _____
Title: _____
Role: _____

Signature: _____ Date: _____
Print Name: _____
Title: _____
Role: _____

Signature: _____ Date: _____
Print Name: _____
Title: _____
Role: _____

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Print Name: _____
Title: _____
Role: _____

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