Risk Management Plan

Fox Island Project

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Agenda

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Project Overview

- This project came about due to a need for a sustainable solution for electricity
- Research began in 2001 for the potential of a wind power solution
  - With assistance of UMASS Renewable Energy Research Lab
- Electricity was very costly for residents
- Fox Island is 1 of 15 remaining year-round island communities, which was being threatened
- Electricity prices on the island were **3x the national average**
  - High cost or importing electricity via underwater cable
  - Maintaining distribution
- Research was done by FIEC to prove that Turbines would help reduce the electricity crisis
- Large focus on residential rapport

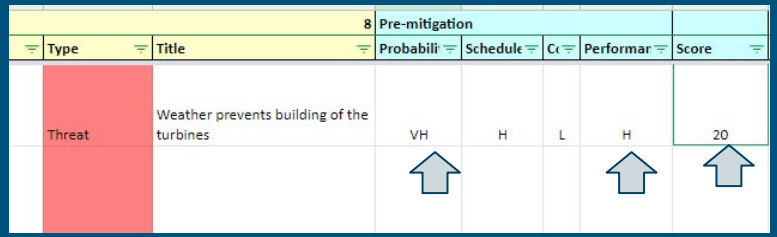
Key Components of RMP

- Roles and responsibilities
- Budgeting
- Timing/Schedule
- Thresholds
- Communication
- Scoring and Interpretation
- Tracking and Auditing

Prioritization

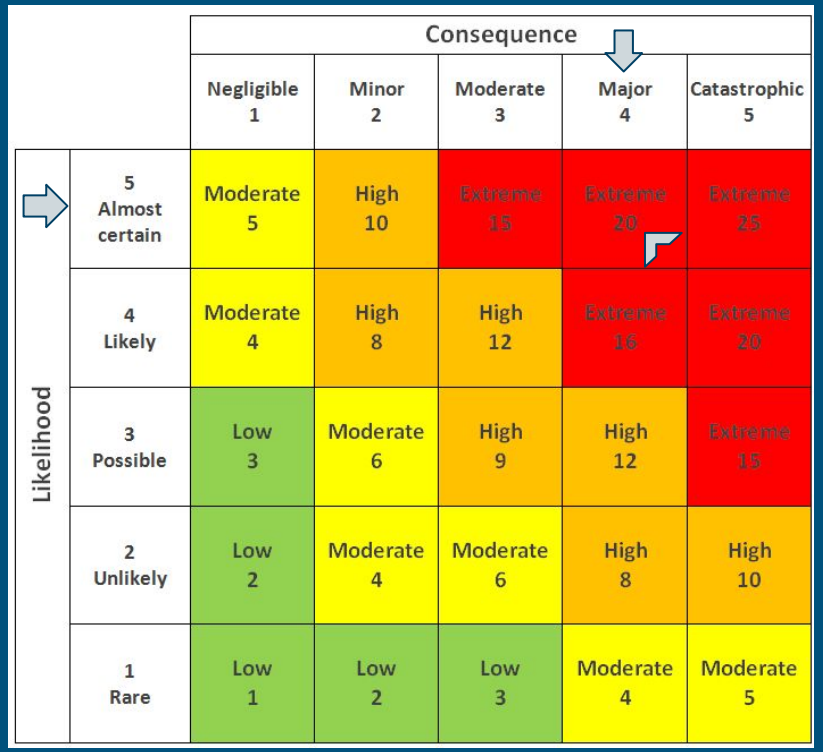
Risks were mostly prioritized based on their likelihood of occurring and their impact to project cost, timing, and scope . We used a numeric scale to provide a quantitative analysis of risks.

	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



		8	Pre-mitigation				
Type	Title		Probabili	Schedule	Co	Performar	Score
Threat	Weather prevents building of the turbines		VH	H	L	H	20

Prioritization: Risk Analysis Matrix



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

Completion and Expected Delays

Start	Key Event
2001	University of Massachusetts begins three year wind study on Vinalhaven.
2003	Wind farm site is purchased.
2005	Fox Islands Electric Cooperative installs a new electrical cord connecting the islands to the mainland.
2007 (spring)	Island Institute convenes a meeting of the island electric cooperative to discuss wind power on the island.
2007 (fall)	Fox Islands Electric Cooperative funds a feasibility study of a wind project at Swenson's Quarry.
2008	George Baker takes leave of absences from Harvard Business School to focus on Fox Islands Wind project.
2008 (spring)	Community meetings to discuss project start on North Haven and Vinalhaven, feasibility, engineering, and environmental studies begin.
2008 (July)	Ratepayers vote overwhelmingly 382-5 to authorize the Fox Islands Electric Cooperative Board to proceed with planning.
2009 (June)	Construction commences.
2009 (November)	Several hundred islanders gather to celebrate the successful, on-time completion of the project

Risk Response Strategies

Mitigate, Avoid, Transfer, Accept, Escalate, Share

Title	Probabili	Schedule	Co	Performar	Score	Strategy	Title	Total Cost	Probability	chedul	os	erformanc	Score	Owner	Description	Cause	Effect	Category	Trigger
															Poor climate on				
Residents Vote Against	H	H	L	M	16	Mitigate	Residents Vote Against	-$5,000.00	L	L	L	N	1	George Baker	Vinalhaven residents may vote against building the turbines	Baker did not gain the community's support	Delays will occur until ratepayers vote in favor of building the turbines	Management	Baker holds town meetings to vote to authorize FIW
Quaries prove harder to escavate	L	H	H	H	8	Avoid	Quaries prove harder to escavate	-$10,000.00	VL	L	L	N	1	Construction Manager	Quarries require extra resources and time to escavate	Quarry terrane is not suitable for escavating	Delay contruction and/or construction site may have be relocated	External	Excavating the Quarry
															Funding for the turbines does	Baker cannot	Lessen project		Pursuing

Some risks were integrated into other planning components of the project which produce secondary risks:

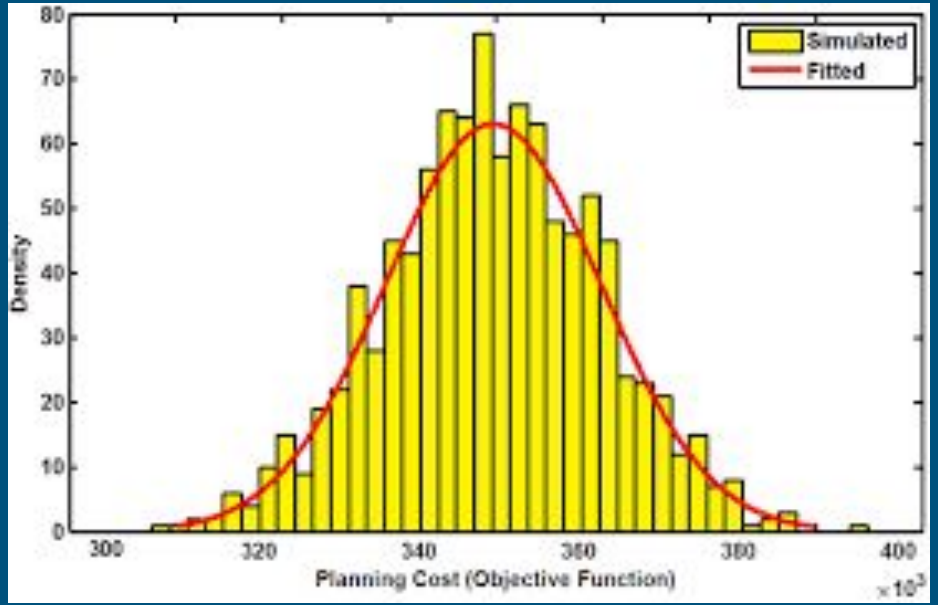
- Resident are reluctant at community meetings

Some risks that occur could impact other risks and their likelihood of occurring:

- Issues with loan payments

Contingency Reserve

- Determined by our risk analysis matrix
- Our request for contingency Reserve, based on the qualitative analysis was;
  - Additional one month in terms of building schedule
  - $1,000,000 in reserve funds
- Team utilized the Monte Carlo Method
- We believe this is sufficient
- The Project Manager will manage this and communicate to the stakeholders if needed



Risk Response Planning

It is the responsibility of the Fox Islands Wind Project's risk mitigation team to select a response for each risk. This 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 a particular threat. One way of evaluating these mitigation strategies, in relation to the contingency reserve specifically, 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
- Differed- determine how risk should be addressed at a future time

Monitor and Control

- As the project life cycle progresses and activities are completed, risk factors and events will be assessed daily to decide if any risk-trigger events have occurred as the project has moved forward.
- The triggers identified need to be gauged and documented, determining them to be either a threat or a negligible event.
- Information will be documented in the risk register and the Fox Islands Wind Project project manager will be notified immediately.
- The risk management team and the project manager will communicate all risk activity to the stakeholders immediately in the manner preferred per the stakeholder register.

Risk Response Implementation

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

- 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 occurs
- A contingency budget will be set aside in lue 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

Value

- Uncertainties have been identified and evaluated using quantitative and qualitative analysis allowing us to better understand individual risks and overall risk to the project.
- We planned risk responses.
- We planned risk monitoring and controlling processes.
- Produced necessary risk related tasks that account for risks that could be catastrophic to the project.
- Improved project schedule and cost estimates.
- Creates project transparency; project is more accurate and detailed and stakeholders and project team become more confident in the project.

Identification, Approach, Lessons Learned

Identification- Risks were identified by researching other wind projects. We found a risk assessment of a wind farm to reference from the European Wind Farm Association. It was necessary from multiple stand points. First to educate us on the intricacies of a wind farm and then to introduce us to what an actual risk assessment might look like.

Approach- The value in this approach was to educate ourselves to the industry as none of us had any engineering experience regarding wind farms. As well as technical information this provided us a base and a map to language format and flow of a risk register.

Lessons Learned- This project deserved the respect of more research. What would have been ideal is to have had more time to look into a wind farms' costs, engineering, and construction, as well as pitfalls and risk associated with such projects.

Questions?

References

References:

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Project Management Institute. (2017). *A Guide to the Project Management Body of Knowledge: PMBOK Guide* (Sixth Edition)