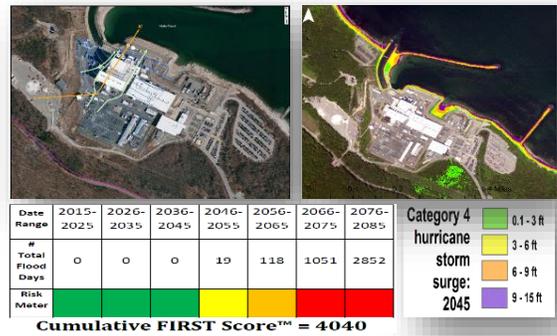


Sample Proposal: Multi-Site Coastal Climate Vulnerability & Adaptation Assessment



Situation Analysis

The Client has multiple manufacturing facilities located along coastlines that are beginning to experience increased forms of flooding. It is essential that they determine which facilities are likely to continue to be impacted, to what degree and over what timeframe. Although, the Client has been considered in the top tier of organizations for emergency planning and response, they believe they need to update their capacity relative to proactive climate risk reduction and adaptation planning. Their objective is to be guided through a process and work with CRC to map their facilities' flood and related climate risks. The goal is to better prioritize, plan and budget for needed adaptations to their facilities, as well as integrate the knowledge into their capital, business continuity, emergency, and CSR planning processes.

Project Overview

The overarching goal of this project is to provide current and forward-looking actionable and credible data for the proposed facilities, property and surrounding area in terms of climate-related exposure, vulnerability and risks leading to the development of a Climate Change Adaptation Plan.

Four Phases form the framework for Coastal Risk Consulting's (CRC) Climate Vulnerability & Adaptation Analysis and Assessment:

Phase I – Define Scope of Work (SOW) Goals & End Uses: define deliverables based on client needs, objectives, timeframe(s), resources, and budget(s).

Phase II – Climate Characterization & Data Acquisition: based on Phase I, determine the availability, accessibility and sources of needed data (especially for emerging regions), identify gaps and, if necessary, adjust the SOW. Assemble client sources of data and define project team make-up.

Phase III - Vulnerability Analysis & Assessment: provide a spatiotemporal accounting of changing climate patterns with an emphasis on short-, medium- and long-term flooding risks and their impacts on the proposed property, individual facilities, assets, infrastructure, and operations.

CRC will perform a comprehensive Flood Risk Vulnerability Analysis, including Sea Level Rise (SLR) to identify changes in flood risk over a thirty year period in five-year increments, or other periods needed to meet project goals. Provide a First Score™ at the facility level. Collectively, these will be used to help prioritize risks at the facility, community, infrastructure, and operational levels.

The core of the assessment engine is CRC's Coastal Risk Rapid Assessment™ (CRRA), a customized flood risk vulnerability assessment which is downscaled to the parcel level. The CRRA models current and future flood risks due to tidal, storm, and groundwater flooding, as compounded by local sea-level rise rates calculated out to a specified future date. The CRRA components are described here:

The Climate Risk Categories as available, are an account of the climate-related, government-designated risk zones. The risk zones include: flood zones, wind zones, evacuation zones, Community Rating or Resilience Scores, Special Flood Hazard Areas, Base Flood Elevation and the Coastal Construction Control Line.

FIRST Score™ - The FIRST Score provides the total number of tidal, non-storm flood days the site is projected to experience over the next 30 years. A flood day is defined as a day when the measured water level, enhanced by sea level rise, is greater than a threshold elevation of the site. The standard FIRST Score™ is projected out to 30-years or as needed to meet the project goals. Scores are displayed using a table divided into 5-year increments to show the progression of risk over time (see Fig. 1).

Parcel-Specific Tidal Flooding and SLOSH Model - Overlays the CRRA maps to show nuisance flooding with the option of including storm surge risk inputs for the site as done by CRC's Parcel-Specific SLOSH Model. This model is a downscaled application of the Sea Lakes and Overland Surges from Hurricanes (SLOSH) model developed by NOAA. The model uses maximum storm surge from a Category 3 hurricane layered with tidal cycles and sea level rise.



Airborne LiDAR High Resolution Elevation Map – This illustrates detailed elevation information for the extent of the site. It provides a visualization of low lying areas and helps give context to the results of the CRRA, FIRST Score™ and SLOSH models, assisting with evaluation, prioritization, and decision-making.

As possible, these analyses & assessments will be expanded to include storms, heavy rainfall, heat stress, drought, and other climate change impacts that are identified during Scoping. These will be layered together to form multi-hazard risk maps that can be used to develop climate risk scenarios as part of capital improvements, disaster risk reduction management, and business continuity planning and decision-making, as well as adaptation planning.

Deliverables include:

- Compilation reports and discussion documents for all pilot site geospatial and climate-related quantitative and qualitative data;
- Tidal (non-storm) flooding shown as downscaled maps for each pilot site and may include maps for specific facilities or critical portions of the site, as needed. A scoring system, indicating the magnitude (in meters/feet) as well as the number of flood days expected is shown in graph form by year and in 5-year increments over a 30-year timeframe;

- Where feasible, extreme rainfall modeling outputs are expected to include number of days and magnitude of impacts for each pilot site. The scoring will be expressed as relative risk levels (high, moderate, low, for example);
- The same form of outputs are expected for heat, drought and other impacts;
- Communications reports including and further defining and exploring the findings will be provided to meet project objectives.

IV –Vulnerability & Hazard Adaptation Analysis will follow the requirements of the Scope of Work providing a granular and specific examination of the company’s near-, mid- and long-term climate exposure, vulnerabilities and related impacts on business at every operating level.

Working in close collaboration with the Client’s cross-functional team members, specific impacts will be detailed. A process to prioritize the materiality of the impacts will be employed, followed by tailored systems to rate the company’s exposure in terms of types of risks and extent of impacts. Adaptation alternatives will be identified and two full-day Workshop sessions are planned to assist in this process, leading to the development of an Adaptation Action Plan and prioritization of adaptation recommendations. **Deliverables include:**

- Identify and evaluate alternatives and actions to reduce risk and future losses (site, facility and community level)
- Evaluate and rank alternatives using benefit-cost analyses (site level and by facility)
- Develop conceptual designs to characterize temporary and permanent adaptation measures
- Guide Project Team in prioritization exercises and toward actionable next steps
- Contribute to climate hazard communications and stakeholder outreach/engagement

Hazard impacts to the sites and their operations will be detailed under current and future climates within the Scope to include: people, buildings, infrastructure, facility systems and components, and key site natural resources. Consequences will be defined in terms of projected losses: direct damage, indirect damages, business disruption, and natural resources impacts, and “hotspots” will be identified.

Foundational: Capacity Building & Communications

CRC will collaborate with the client to tailor and deliver outreach and in-reach communications and knowledge exchange sessions, presentations and materials. CRC will also supplement the client’s capacity-building program – specifically in the area of flood risks and flood adaptation planning. The objective is to assist the Client in a) developing stakeholder understanding, trust and support; and b) increase organizational capacity. Both objectives are expected to lead to an increased ability to recognize, process, plan and integrate climate risk analyses and solutions across the organization. **Deliverables include:**

- A tailored initial climate risk benchmarking assessment (to measure organizational readiness)
- In-reach and Outreach communications plans & materials
- Structured and self-paced web-based learning & communications
- Workshops (2)

The underlying tasks for each Phase: I through IV, and the deliverables are organized to flow from the acquisition and analysis of data to knowledge, organizational and community capacity building, and finally -- action.

Coastal Risk Consulting brings its wealth of knowledge and experience to your business to help you address current climate risks and develop a long term sustainable and cost-effective strategy for adopting appropriate climate adaptation measures to protect your vulnerable assets and minimize disruption of business operations due to future extreme climate events.

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Example: Accelerated 120-Day Schedule (simplified)

