

Project Development Process

Coastal has adopted the Stage Gate management process which is a development technique in which a particular project is divided into stages (or phases) separated by gates. At each gate between stages the continuation of the initiative is decided by management or the Board of Directors. The decision is based on the information available at the time, including business case, risk analysis, and availability of necessary resources (including funding requirements, timing issues, managerial and manpower requirements).

Major Stages

The model adopted by Coastal is comprised by six separate and major phases:

1. Discovery
2. Site Assessment
3. Development Plan
 - a) Definition
 - b) Business Case
4. Implementation
5. Construction
6. Operations
 - a) Commissioning
 - b) Ongoing Operations

Decision Process

The gate development process is governed by three main assessment issues:

1. Quality of Execution: a check point to review if previous step was executed in a quality fashion
2. Business Rationale: does the project continue to be attractive from an economic and business perspective
3. Action Plan: is the proposed action plan and requested resources reasonable and sound

At the end of each stage a gate meeting will be held that will lead to a decision based upon one of four conclusions:

1. Go ahead to next stage
2. Modify the plan
3. Put the project on hold
4. Kill the project

Coastal will require review and approval of the project by the Board of Directors at the end of Stage 3 in order to move into the Implementation stage.

Stage Details

Stage 1 - Discovery

The discovery stage is the first part of any project development whether or not the stage gate model is being utilized. During this basic stage the development team is simply deciding what direction the company wants and is capable to pursue based upon strategic decisions handed down from the Board of Directors and CEO (factors governed by geographical territory, regulatory criteria and economics). Coastal has already implemented a plan to focus on certain areas such as Ontario and has conducted a broad brush evaluation of the province to determine prospective sites for implementation of the VLH turbine.

Stage 2 – Site Assessment

During this step the main goal is to conduct a preliminary evaluation of the potential development and provide screening analysis. Coastal has developed a Site Feasibility Checklist in order to provide management and our engineers with the basic information required to determine if a site meets the requirements of the VLH turbine, will be able to produce commercially viable amounts of power and provide some basic economic analysis. This process must also recognize the strengths and weaknesses of the development and what it potentially is able to offer to the company, also to determine whether or not they should pass the development onto the next stage.

Stage 3 - Development Plan

This is the last stage of concept development where it is crucial for Coastal to perform a solid analysis before we may consider moving forward with the project. In comparison to the previous stages this phase is more difficult, complex, and resource-intensive. However, we must put forth a strong effort in this stage as it directly relates to the potential success of a new development. There are four main steps that comprise this stage: Project Definition, Business Case, Development Plan, and Review.

Project Definition

This stage will determine what creates value for the company and addresses questions such as firming up power output that can be generated from the site, defining environmental concerns, stakeholder impacts and a more detailed estimate of the capital costs. Preliminary engineering design concepts are also developed and tested against established criteria for hydropower development. These activities will help define the project and provide a foundation for the development strategy. Next, the company must build a technically feasible development concept, which includes the estimation of capital costs (ie: infrastructure, equipment, construction costs, etc.). Once this is completed the company can then produce a production and operations cost analysis. Lastly, the company will then conduct the business analysis, risk analysis, and financial analysis of the new project.

Business Case

The business case is a document that defines the project and provides the rationale for developing it. This includes a scheduled list of tasks and events along with timelines for milestones throughout the proposed development process. Also included are the personnel, time, and financial resources needed to complete the project. The combined primary components will include the results of the activities of Project Definition and Analysis; legal and regulatory requirements; safety, health, and environmental considerations; assumptions made to draw the conclusions and why they are valid and reasonable; and define potential criteria that would trigger certain changes/events which will mandate an emergency business case review. This document will be referred to throughout the development process and edited when necessary. The development plan includes an expected commissioning date.

Review

This is when Coastal management will review the rationale for pursuing the project. They will analyze the information provided by the previous steps in this process to decide whether or not the development should move forward. If it is decided to be pursued then it is presented to the Board of Directors for approval through gate three and moves on to the Implementation stage. At this point the Project will be placed in its own Limited Partnership (LP) Company for execution. All of the costs, efforts, risks and time incurred by Coastal up to this stage will be capitalized as a development fee into the LP.

Stage 4 - Implementation

During the Implementation Stage the Development Plan of the previous stage is now actually executed. The project's design and procurement are carried out including finalization of construction plans. It is important that the company adheres to their overall goal of the Development Plan including formal environmental assessments, regulatory approvals and permits, detailed engineering, interconnection, financing and partnership agreements, energy sales contracts, detailed engineering, supply contracts and other commitments. The

development team maps out a realistic timeline with specific milestones that are described as SMART: Specific, Measurable, Actionable, Realistic, and Time bound. The implementation stage is when the project truly builds momentum as the LP commits more resources to the development and makes full use of cross-functional teamwork as the engineering, regulatory, manufacturer and construction groups all come together to get to a consensus of the final development before construction. Having diverse input ensures that the project continues to meet Coastal's technical and financial goals. A diverse team also allows specific roles and leadership positions to develop as team members make contributions using their strongest attributes. With members having clearly defined roles, tasks can be performed concurrently ensuring a much more efficient development process. The ultimate deliverable of the Implementation stage is the final design, which will be constructed in the next stage of the stage-gate process.

Stage 5 – Construction

This is when the final vision of the project development is accomplished. The purpose of this stage is to realize the benefit of all the work done so far into a physical operating hydropower facility. The areas that will be evaluated include: the project itself, the construction process, any changes required and the financial merit of the development. The timeline is frequently reviewed and updated, helping the development team stay on task and providing management, with it's financial partners, timely information about the project's progress.

Stage 6 – Operations

Commissioning

The plant commissioning is the beginning of the sixth stage of the stage-gate process and is the culmination of the project having met the proper requirements of the previous stage-gates. The Commissioning stage is one of the most important, if not the most important stage of project development. Development teams must ensure interconnection agreements are in place, purchase agreement terms are met and that the energy generated is in keeping with performance criteria agreed with the turbine supplier. In addition part of the Commissioning stage is training the Operators so they are very familiar with the plant. Having a smooth commissioning process is an important part in the stage-gate process because it translates to faster time to profit, but if done thoroughly and well, step by step, a smooth commissioning process should also result in a more knowledgeable and prepared operations team. Taking all of these factors of the commissioning process into consideration is key to a successful project commissioning and in general a successful development project.

Operations

The final step in the sixth stage of the Stage-Gate process is the Operations. The completion of the commissioning phase of the development requires that all future monitoring, maintenance and operation of the development is transferred from the development group to the operators

working for the Operations group, as laid out in the Operations Plan and reflected in the operations contract.

Costs of Each Stage

Stage – Gate	Projected Costs
Discovery	\$15,000
Site Assessment	\$30,000
Development Plan – project definition	\$100,000
Development Plan – business case	\$100,000 - \$150,000
Implementation	\$300,000 – 800,000
Construction	\$2 million - \$200 million
Operations	\$100,000 - \$200,000