



Marketing Plan

For the Pacific Marine Energy Center South Energy Test Site

Prepared by
GamePlan, Inc. and
Oregon Wave Energy Trust
On behalf of Northwest National Marine Renewable Energy Center

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Part 1: Analysis

Introduction

This report is issued to the Northwest National Marine Renewable Energy Center (NNMREC) who commissioned Oregon Wave Energy Trust (OWET) and GamePlan, Inc. to develop a plan for marketing a full-scale, grid-connected, open ocean test center for wave energy converters (WECs): the South Energy Test Site of the Pacific Marine Energy Center (PMEC-SETS).

PMEC-SETS Background

The Northwest National Marine Renewable Energy Center (NNMREC), a collaboration between Oregon State University (OSU), the University of Washington (UW) and the University of Alaska Fairbanks, and one of three National Marine Renewable Energy Centers (NMREC), was established through the United States (U.S.) Department of Energy (DOE) Water Power Program and local funding to support marine energy research, development, and testing in the U.S. The collective NNMREC activities facilitate commercialization of wave and tidal energy devices, inform regulatory and policy decisions, and close key gaps in marine renewable energy understanding with an emphasis on student learning. NNMREC's goals and objectives are to:

- Optimize individual marine energy devices and arrays to increase their energy capture, improve their reliability, and decrease their cost of energy
- Evaluate potential environmental, ecosystem, and human dimension interactions with and effects of marine energy technologies
- Facilitate and conduct research to inform adaptive management of marine energy technologies
- Improve forecasting, characterization, and assessment of marine energy resources
- Through the Pacific Marine Energy Center, develop integrated, standardized facilities to serve U.S. and international developers of wave, tidal, and in-river energy devices

NNMREC has a suite of test locations that range from scaled tanks at OSU and UW to open water testing in Lake Washington, Puget Sound, Alaska, and the Pacific Ocean off Newport, OR. These test facilities are branded under the Pacific Marine Energy Center (PMEC). In addition to testing various energy generation technologies, significant investment has been made in understanding environmental effects and socioeconomic impacts of this new industry.

To leverage these activities and advance the industry further, NNMREC is now developing a grid-connected wave energy converter test facility, the PMEC South Energy Test Site (PMEC-SETS). As the first of its kind in continental North America, the PMEC-SETS will play an integral role in advancing wave energy from early-stage ocean testing through final demonstration and commercialization. The overall purpose of PMEC-SETS is to demonstrate the viability of wave energy by providing a fully functional ocean test facility for prototype and utility-scale WECs connected to the electrical grid.

The complete build-out at PMEC-SETS is estimated to be approximately \$50 million to develop a total of four grid-connected test berths capable of commercial-scale testing of up to 20 WECs at one time. The berths will be designed to accommodate single WECs or arrays of WECs. Upon completion of the final design and permitting and licensing activities, NNMREC will be in a position to facilitate the complete

build-out of the project. Completion of these permitting and design activities is anticipated to be in late 2017.

Thanks to several rounds of funding totaling more than \$9 million in federal funding and non-federal cost match, NNMREC has completed the pre-design of P MEC-SETS and, with additional funding from the DOE and necessary permits, is ready to initiate construction and begin drawing developers from around the world to test in Oregon as soon as 2019.

P MEC-SETS will demonstrate the viability of marine energy off the very energetic northwest coast of the U.S. by providing a fully functional test facility for WECs at Technology Readiness Levels (TRL) five to nine. P MEC-SETS will be connected to the regional grid. P MEC-SETS will meet the following key industry development needs for full-scale single and array WEC testing and, when built, its services are expected to include:

- Standardized power analysis at an accredited facility
- Grid interconnection data from an accredited facility
- Grid synchronization data (standardized fault testing and power dissipation)
- Power demonstration on the grid (e.g., technical and contractual)
- Procedures and protocols for all stages of development

P MEC-SETS will provide a wide range of benefits to a variety of industry partners and stakeholders, including:

- Centralized location to conduct technological and environmental testing
- Unified industry and academia to maximize financial support from public sector
- Focused funding for infrastructure across several proposed wave energy technologies
- Accelerated information gathering, technology design, and environmental impact analysis
- Standardized testing metrics for technology performance evaluation
- Economical means of deploying and testing WEC prototypes in the ocean environment
- Limited potential conflicts among competing uses for multiple ocean energy test sites
- Increased efficiency and effectiveness of public funding by focusing on one, full-service facility
- Training ground for future jobs in the ocean energy industry

Competitive Alternatives

GL Garrad Hassan, now DNV GL, in its **Market Analysis Report**¹, a companion document to the Marketing Plan, examined operational and planned wave energy test facilities sites for full-scale technology demonstration.

There are a number of facilities for the testing or pre-commercial demonstration of WECs. Most of these facilities are located in Europe, including primary competitive alternatives to P MEC-SETS, the European Marine Energy Center (EMEC) located in Orkney, Scotland, and Wave Hub Limited located in Cornwall, England.

Secondary competitive alternatives to P MEC-SETS include planned or existing wave energy test centers in Europe, China, Japan, and New Zealand. In the U.S., potentially competitive sites include the U.S. Navy Wave Energy Test Site (WETS) managed in partnership with the Hawaii National Marine Renewable

¹ Market Analysis Report for P MEC Wave Energy Test Facilities (GL Garrad Hassan, 2013)

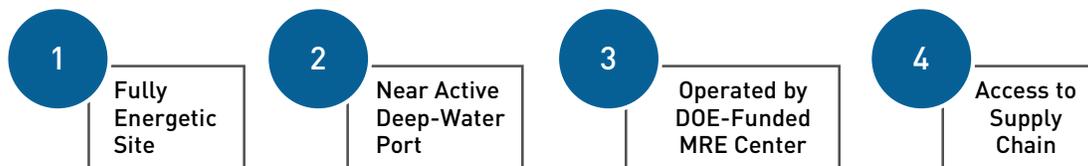
Energy Center (HINMREC) and a site proposed by California Polytechnic State University (CalPoly) in Central California. A full list and description of these test centers is included in the **Market Analysis Report**.

Industry Outlook

Unlike other forms of renewable energy, wave energy has yet to reach the commercialization stage. In order for this to happen, WECs must prove their ability to perform in extreme environments for extended periods of time. If technical challenges can be met and costs reduced, marine renewable energy has the potential to make an important contribution to energy supply and to the mitigation of climate change in the coming decades. To that end, the public and private sectors are exploring a range of initiatives to promote and accelerate the development and deployment, and eventual commercialization, of marine renewable energy technologies.

The final steps toward technology commercialization require a fully energetic, grid-connected test site. While foreign options exist, that approach undermines the secondary, but very important, economic development potential of this industry; if late-stage wave technologies – generally those at TRLs seven and eight – take the final steps to commercialization in Europe and elsewhere, the U.S may well lose the full economic potential of the technology, thus limiting its development potential here.

To test in the U.S., the wave energy industry must have a world-class site where single WECs and WEC arrays can be tested and proven before commercialization. Developers agree a wave energy test center should be:



- Sited in a location with a fully energetic wave resource so that all stakeholders can be confident that their WECs can survive in the types of environments where wave energy harvesting will eventually be used and with the following characteristics:
 - Water depth of 50-100 m
 - Wave resource of 20-40kW/m
 - Seabed conditions – sandy bottom
 - 1-year return on significant wave height (6-8 m extreme wave 58%)
 - Seasonal variation ratio in incident wave power around 5
- Located near to an active, deep-water port with facilities available to stage and maintain WECs
- Operated in conjunction with an established DOE-funded national marine renewable energy center in order to take advantage of the extensive expertise and federal investment in the research center (this model already exists with the intermediate stage grid-connected WEC test facility at Kaneohe Bay, WETS, which leverages the expertise of the Hawaii NMREC)

- Accessible to an extensive and experienced manufacturing industry and supply chain

Drilling down one level, Market Analysis survey respondents identified the following key characteristics and services as most important to be offered by PMEC-SETS:

- Site pre-permitted (avoidance of regulatory process) (2.84 percent of survey respondents)
- Resource monitoring and support (2.68 percent of survey respondents)
- Support understanding/navigating national policy (e.g. securing federal incentives, the federal regulatory process) (2.63 percent of survey respondents)
- Support understanding/navigating state policy (e.g. securing state incentives, the state regulatory process) (2.58 percent of survey respondents)
- Operational support including workshop, shipyards, and storage of large items (2.47 percent of survey respondents)
- Power purchase agreement (2.47 percent of survey respondents)

Conversely, survey respondents cited the following as factors that might prevent deployment at PMEC-SETS:

- Insufficient financial support in the U.S.
- Onerous consenting requirements
- Uncertain market conditions
- Insufficient infrastructure

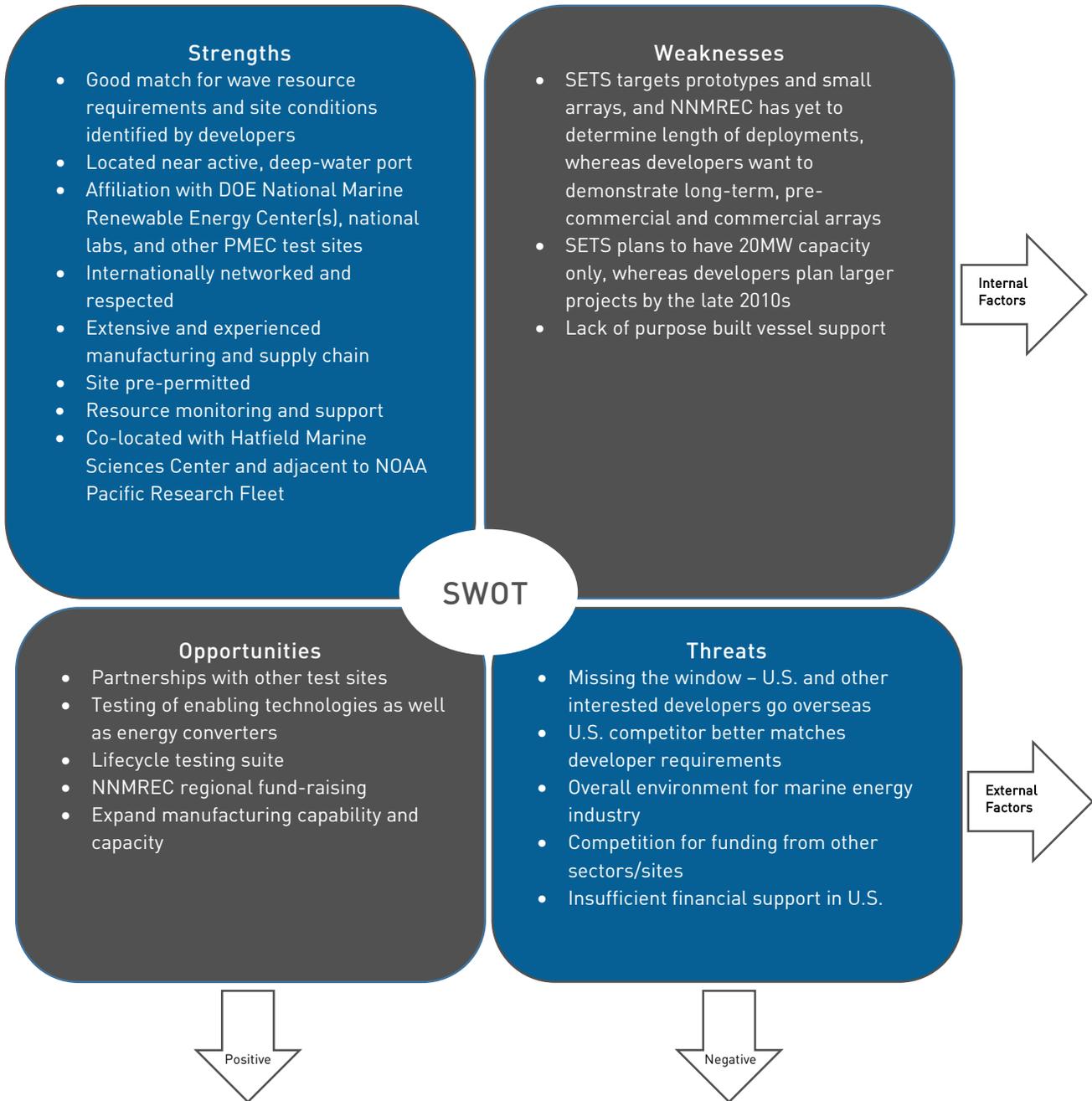
The Aquatera Ltd. **Supply Chain Analysis**², commissioned on behalf of NNMREC by the Oregon Wave Energy Trust, confirmed the following service offerings are most important to developers:

- Pre-permitting of site
- Resource monitoring and support
- National regulatory and grant aid support
- State regulatory and grant aid support
- Power purchase agreement(s)
- Quayside workshop building and storage
- Impact monitoring

Strengths & Opportunities

Below is a summary of PMEC-SETS' internal strengths and weaknesses and opportunities and threats (SWOT) external to the organization.

² Oregon Wave Energy Supply Chain Analysis (Aquatera Ltd., 2014)



Market Segmentation and Target Audiences

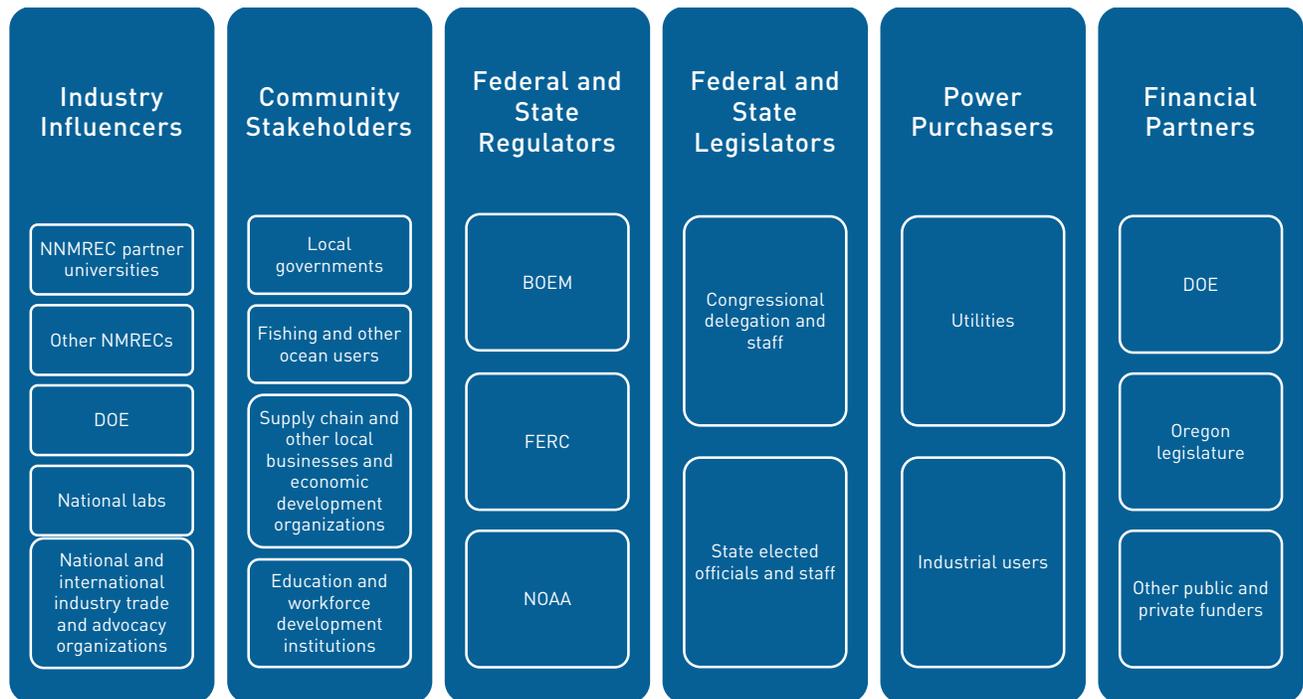
GL Garrad Hassan identified 37 potential WEC developers to be targeted for stakeholder consultation in the development of its market analysis. The majority of developers included were identified as having WECs most likely to conduct a fully energetic ocean deployment within the following five to 10 years and also included developers having a particular interest in a P MEC-SETS deployment due to their location in the U.S. Nineteen completed survey responses were received from developers in the U.S., Europe,

Australia, and Asia. Follow up interviews were conducted with 13 of those developers. Feedback can be summarized as follows:

- U.S. developers demonstrated the most interest. 42% of the respondents were from the U.S., 27% from the United Kingdom (UK), and 11% from Australia.
- Respondents are developing a diverse range of technologies, but point absorbers are most common at 42% of respondents.
- Respondents' WECs are generally between lab tests and prototype demonstration with 32% of respondents expecting to reach TRL four to seven near-term.
- All respondents expressed some degree of interest in deploying in Oregon, while 63% of those respondents caveated that their interest in Oregon is contingent upon the right conditions and support.

The target market for PMEC-SETS is relatively small at this point in industry development. This will change as the segment grows, but now affords the opportunity to develop tightly targeted messaging and highly efficient delivery strategies. The current target market for PMEC-SETS is deep-water WECs at TRLs seven to nine.

PMEC-SETS' broader audience is shown below:



Part 2: Planning

Marketing Goals & Objectives



Phase One: This period provides the research, context, and baseline metrics for establishing a well-informed Marketing Plan.

Goal 1: Understand and Define Opportunities
Objectives
Complete market analysis
Complete supply chain analysis
Complete competitive analysis
Complete market segmentation and identify target audiences
Develop differentiated points of value

Goal 2: Finalize Marketing Plan
Objectives
Finalize competitive analysis
Finalize market segmentation and target audiences
Finalize differentiated points of value

Phase Two: Phase-two goals are focused on addressing the dual priorities of building awareness of PMEC-SETS and recruiting potential clients. These goals and objectives are tactical, which affords PMEC-SETS the opportunity to lay the foundation, measure, and optimize marketing initiatives.

Goal 1: Establish Business Development & Marketing Communications Team
Objectives
Identify, recruit, and assign players
Define roles and responsibilities and processes to work together
Develop individual work plans to execute Marketing Plan

Goal 2: Develop Client Base
Objectives
Identify and prioritize qualified prospective clients
Use data to effectively target outreach to attract qualified clients

Goal 3: Update Marketing Assets
Objectives
Audit available assets
Refine differentiated points of value
Refresh brand identity and content guidelines
Develop brand platform and messaging architecture
Produce marketing tools

Goal 4: Build Brand Awareness
Objectives
Increase awareness and strengthen relationships with key stakeholders and future clients

Phase Three: By Phase-three, brand resources and awareness of PMEC-SETS will be established and optimized. Though the competitive landscape will evolve requiring continuous refinement, overarching goals will transition to execution and measurement. It will be important during this phase to examine and redevelop brand resources as necessary based on market research and development.

Goal 1: Continue to Grow PMEC-SETS Reputation
Objectives
Enhance quality of experience
Increase retention of and referrals from clients
Attract new clients

Goal 2: Maintain Strong Client Relationships
Objectives
Increase external awareness and recognition for achievements

Goal 3: Strengthen and Broaden Brand Awareness
Objectives
Maintain Brand Consistency
Create meaningful brand messaging for external audiences
Continue to build awareness in target market segments
Support a community of brand ambassadors

Part 3: Execution

Introduction

This section of the Marketing Plan is a comprehensive blueprint that outlines the objectives, strategies, goals, and tactics for business development and marketing communications. Potential business development and marketing communications activities are collected in an Activity Vault for further development in the final Marketing Plan. Also included for future reference are snapshots of key program processes and elements.

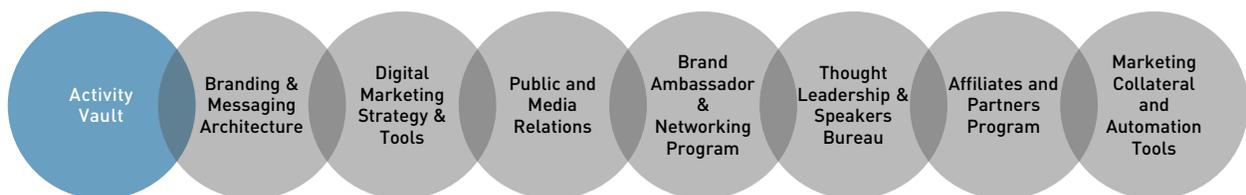
Business Development Objectives, Strategies and Tactics

Objective: Secure commitments from wave energy developers to deploy at PMEC-SETS and build a pipeline for future deployments.		
Strategy 1: Establish Business Development Goals	Strategy 2: Develop Client Base	Strategy 3: Maintain Strong Client Relationships
<p>Tactics:</p> <ul style="list-style-type: none"> • Set business acquisition goals • Develop business acquisition strategies • Develop business acquisition tactics • Develop existing business growth strategies • Develop existing business growth tactics 	<p>Tactics:</p> <ul style="list-style-type: none"> • Identify and prioritize qualified prospective clients • Use data to effectively target outreach to attract qualified clients 	<p>Tactics:</p> <ul style="list-style-type: none"> • Enhance quality of experience • Increase retention of and referrals from clients • Attract new clients



Marketing Communications Objectives, Strategies and Tactics

Objective: Condition the market to support early business development efforts and maintain brand awareness and preference to support future client acquisition and retention efforts.		
Strategy 1: Update Marketing Assets	Strategy 2: Develop Client Base	Strategy 3: Maintain Strong Client Relationships
<p>Tactics:</p> <ul style="list-style-type: none"> • Audit available assets • Refine differentiated points of value • Refresh brand identity and content guidelines • Develop brand platform and messaging • Produce collateral materials 	<p>Tactics:</p> <ul style="list-style-type: none"> • Maintain Brand Consistency • Create meaningful brand messaging and delivery systems for external audiences • Continue to build awareness in target market segments 	<p>Tactics:</p> <ul style="list-style-type: none"> • Increase external awareness and recognition for achievements



Branding and Messaging Architecture

Step 1: Define

Branding starts with defining a clear positioning strategy that distinguishes PMEC-SETS and sets it apart from all other institutions. During this first step of the branding process, a positioning strategy is defined that is relevant because it is rooted in fundamental "customer" need, differentiated because it reflects unique value, and credible because it is authentic and true. This positioning strategy becomes the core tool for developing engaging, meaningful brand communications.

Step 2: Translate

Once the brand position has been defined it is brought to life within the context of a strategic communications framework, identifying what stories need to be told, by whom, to whom and how. During this phase, of the branding process research, brand attributes and the brand personality are translated into a defined identity that fits the parameters of the positioning platform.

Step 3: Execute

Once the brand is defined and translated, targeted communications strategies are developed and executed to build awareness, understanding, and credibility for the organization with key target audiences. The ultimate goal is to develop high preference and choice among audiences – encouraging them to select the PMEC-SETS first when considering a positive action (such as deployment or funding).

Digital Marketing and Communications Strategy

Social Networks

Bookmarking Sites

Social News

Social Publishing Platforms

Media Sharing

Interest-Based Networks

Media Relations

Develop Media List & Materials

Build Communications Calendar

Media Outreach & Introductions

Newsworthy Milestones

Editorial Calendars

Bylined Articles

Timeline

Executing the plan is the implementation process that turns strategies and plans into actions in order to accomplish strategic objectives and goals. The following timeline synchronizes execution with the steps remaining to finalize the marketing plan and ensure resources are in place.

Timeline	Q3 2016	Q4 2016	Q1 2017	Q3 2017
Phase 1: Analysis				
Goal 1: Finalize Marketing Plan				
Objectives				
1. Finalize competitive analysis				
2. Finalize market segmentation and target audiences				
3. Finalize differentiated points of value				
Phase 2: Planning				
Goal 1: Establish Business Development & Marketing Team				
Objectives				
1. Identify, recruit, and assign players				
2. Define roles and responsibilities and processes to work together				
3. Develop individual work plans to execute Marketing Plan				
Goal 2: Develop Client Base				
Objectives				
1. Identify and prioritize qualified prospective clients				
2. Use data to effectively target outreach to attract qualified clients				
Goal 3: Update Marketing Assets				
Objectives				
1. Audit available assets				
2. Refine differentiated points of value				
3. Refresh brand identity and content guidelines				
4. Develop brand platform and messaging architecture				
5. Produce marketing tools				
Budget-based 12-Month Activity Plan				
Measurements				
Goal 4: Build Brand Awareness				
Objectives				
1. Increase awareness and strengthen relationships with key stakeholders and future clients				
Phase 3: Execution				



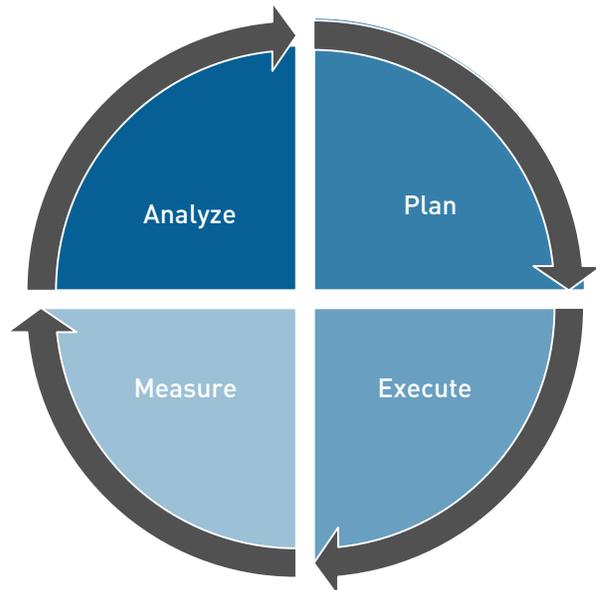
Budget

During the planning phase, marketing campaigns will be mapped out in a budget-based, 12-Month Activity Plan. This activity plan will outline specific activities by quarter and will be reviewed and modified on a quarterly basis based on new opportunities, changing business needs, and the outcomes of previous activities against performance indicators.

Measurement & Analysis

Key performance indicators (KPI) are key measures that will have the most impact on moving the organization forward. Key performance indicators will include:

- Business Development
 - Reach 25% occupancy in operating year one
 - Achieve 75% occupancy in operating year two
 - Reach 100% occupancy by operating year three
- Marketing and Communications
 - Updated marketing assets by December 2016
 - Develop 12-month activity calendar and budget, including specific goals for each campaign by December 2016



Key Performance Indicators