

RNG – A Developers Perspective & Insight on a New Project in Lawrence, KS

SWANA/LMOP 2018



The Landfill Group

Company Overview

The Landfill Group offers a comprehensive solution to the Biogas industry through our three branded operating businesses: Enerdyne Power Systems, Advance One Development and Advanced Biogas Systems



- Develops, owns, operates and consults on landfill gas to energy projects
 - National footprint with projects throughout the U.S.
- Current portfolio includes five operating LFG projects with various end uses:
 - Electricity
 - High Btu
 - Medium Btu



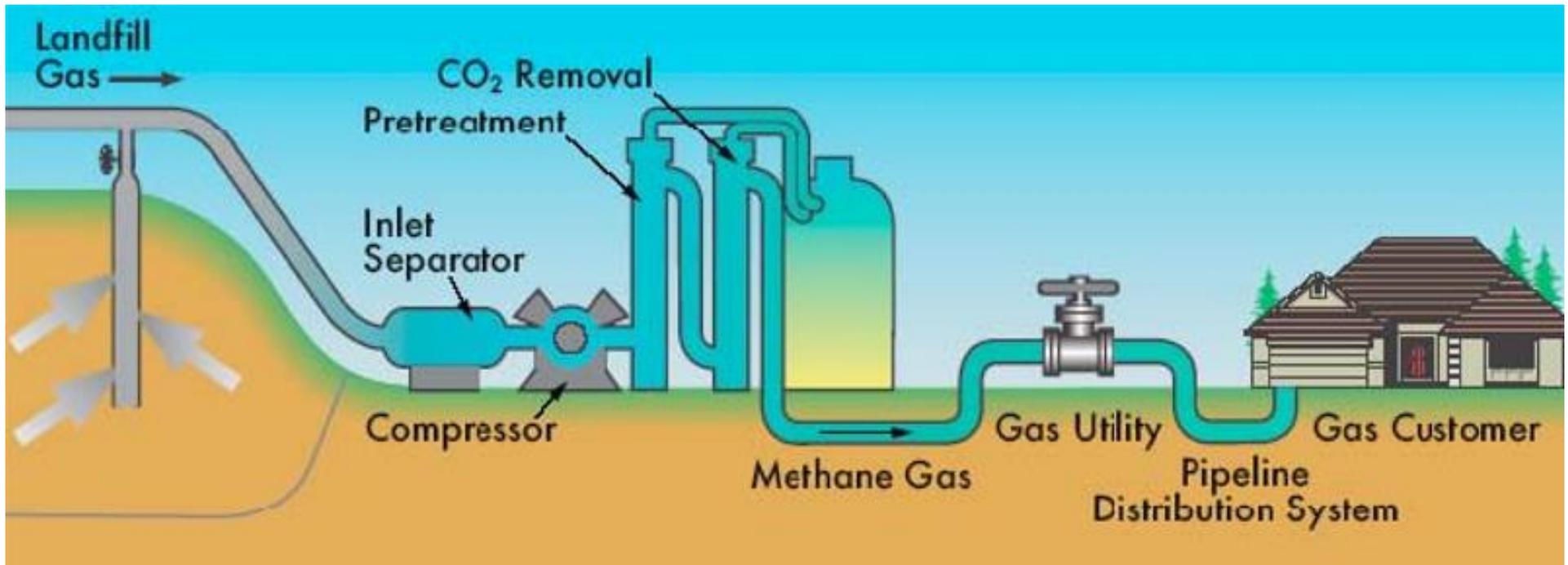
- Provides complete landfill gas construction services including:
 - Wellfield construction
 - Plant construction
 - Equipment installation
- Ability to operate nationally with General Contractor Licenses in multiple states



- Manufacturer of equipment for the Landfill Gas Industry
- Product offering includes:
 - Blower / Flare Skids
 - Siloxane removal
 - Gas dehydration
 - Hydrogen Sulfide removal
 - O2 Removal
 - CO2 Removal
 - Custom Fabrication

Landfill Gas to High BTU

Process Overview



Our Proven Process

		<u>Expected Timeline</u>
The Opportunity	<ul style="list-style-type: none"> Review preliminary information Conduct site visit and due diligence Determine fit 	1 – 2 months
Formalize Relationship	<ul style="list-style-type: none"> Collaborate on strategic plan and identify objectives Outline regulatory and safety responsibilities Define economic consideration Execute Gas Rights Agreement 	1 – 2 months
Development Process	<ul style="list-style-type: none"> Engage affiliated entities and strategic partners on design Complete major development milestones – offtake, permitting, engineering, financing. 	6 – 9 months
Construction	<ul style="list-style-type: none"> Engage affiliated entities and strategic partners on construction Collaborate with customer on best plan to minimize operational interruption and maximize safety Communicate plant construction plans and progress with full transparency 	6 – 12 months
Commercial Operation	<ul style="list-style-type: none"> Commence Project start up Prioritize safety and regulatory compliance Minimize local environment impact Maximize production and economic gain for all Turn over operations to third party (if applicable) 	1 – 3 months
Total Timeline		15 – 28 months

RNG Project Development Challenges

There are many challenges in the development of an RNG project. The following have been identified as the most significant.

- Scale and Gas Flow
- Wellfield Control
- Capex and Interconnection
- RNG End Use Market
- Speed to Market

Renewable Power Producers

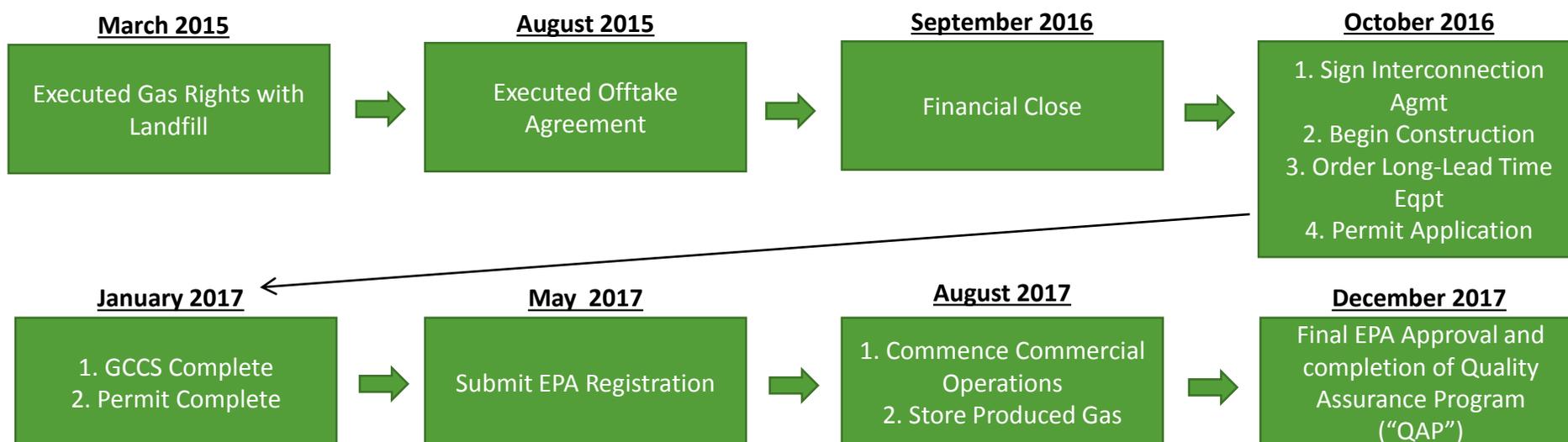
Project Overview

Renewable Power Producers (“RPP”) is a new landfill gas to high-btu renewable natural gas plant that came online in August 2017

Project Summary

- Located at the Hamm Sanitary Landfill in Lawrence, KS
- Project converts raw landfill gas to high-btu pipeline quality renewable natural gas
- Plant capacity is 2500 scfm, expandable to 4000 scfm
- End use is vehicle fuel market as part of EPA’s renewable fuels program
 - 2018 expected production is over 4 million gallons of cellulosic biofuel
- Constructed 7.2 mile pipeline to interconnect with natural gas transmission line
- With exception of CO2 removal unit and compressors, all equipment fabricated by our internal fabrication division – Advanced Biogas Systems

Development Timeline



Renewable Power Producers

Project Overview



Renewable Power Producers

Gas Collection System

- Construction of GCCS commenced in October 2016 and was completed in January 2017
- Over 150 collection points
- Combination of vertical and horizontal wells
- All work completed internally by our affiliate company Advance One Development



Renewable Power Producers

Pipeline

- Construction of pipeline commenced in November 2016 and was completed in February 2017
- 7.2 Miles from plant outlet to pipeline natural gas transmission tap
- 11 Private Easements
- 2 Levee Crossings
- 1 Airport Crossing
- 4-1/2" High Pressure Steel line



Renewable Power Producers

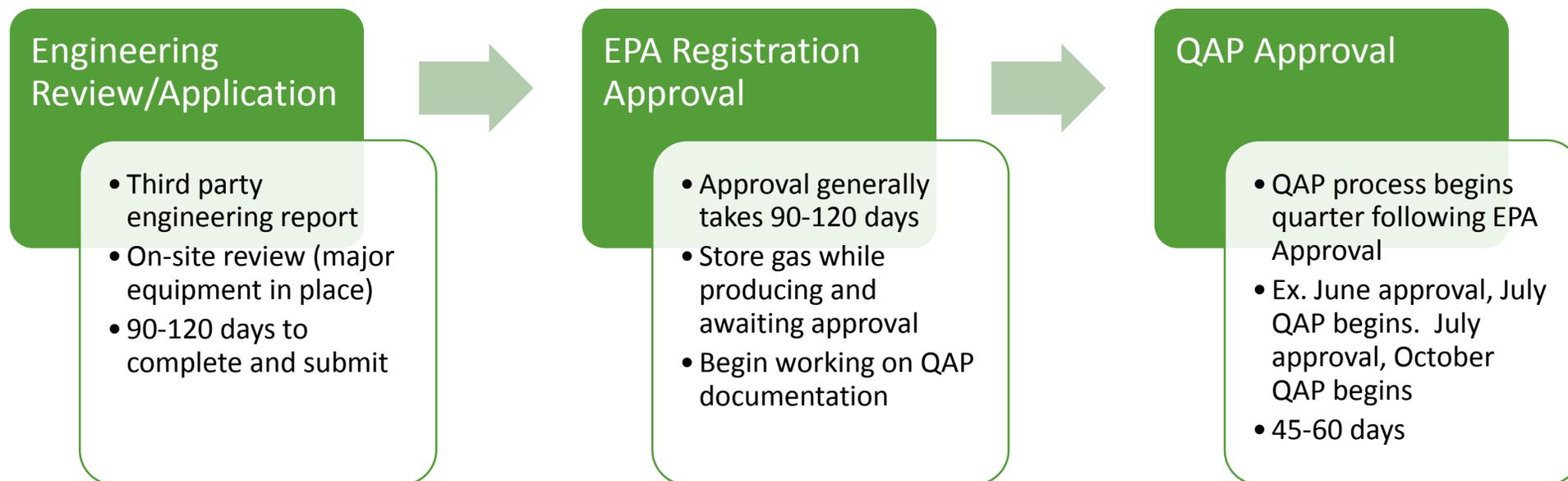
EPA Registration and QAP

Developers should anticipate a few months of cash burn while the project finalizes its registration with EPA and completes the Quality Assurance Plan

Process Overview

- In order for RPP to generate RINs, a project needs to submit an application to EPA which will register the project under the Renewable Fuels Standard
- Once EPA registration is approved, the project will be enrolled in a voluntary program which helps verify the validity of the RINs generated.
 - This is known as QAP or Quality Assurance Plan
- Exact timing varies

Process Timeline



Renewable Power Producers

Commercial Operations

Before –
January 2017



After –
August 2017

