Landfill Gas to Energy

County of Maui
Department of Environmental Management
Island of Maui

- Roughly 100,000 residents, plus visitors
- Enhancement of the island’s beauty is a priority
- One primary landfill – Central Maui Landfill
- Over 30 percent recycling rate by tonnage
- Average landfill daily tonnage – 450 tons
- Landfill development cost: $7-8M for 12 acres

How do we convert refuse into a resource???
Landfill Methane Generation

- 80 mil HDPE lined and clay capped landfill
- Organic Decomposition of Waste
  - Phase I: Aerobic bacteria break down complex carbohydrates, proteins, and lipids
  - Phase II: Anaerobic bacteria create acids and alcohols
  - Phase III and IV: Methanogenic bacteria produces methane; a stable rate of methane generation typically lasts 20 years or so
Landfill Gas to Energy

Central Maui Landfill

47 Gas Collection System
Vertical Well Heads
~ 30-120 foot depth

Gas Collection System
Distribution Line
~ 7,000 feet of pipeline

System Flare
65 million BTU

Well head, collection system and flare cost - ~ $4 million

Methane gas – a precious resource – is wasted.
Landfill Methane Generation

Appendix C - Figure 3
Phases I-VI LFG Generation/Collection Estimate

LFG Flow Rate Normalized to 50% Methane (scfm)

Year


Combined LFG Generated
Combined LFG Collected

September 15, 2011
County of Maui
Project Implementation

- Estimated stable flow – 600 cubic feet per minute at 45 percent of methane
- Anticipated use of methane - electricity, medium BTU grade fuel, LNG, or other
- County is currently in a request for proposal process to contract a developer
- Full-scale operation is anticipated in 2014
Thank you.

Contact Information:

Kyle Ginoza, P.E., Director
County of Maui
Department of Environmental Management
(808) 270-8230
kyle.ginoza@co.maui.hi.us