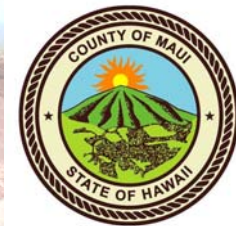


Landfill Gas to Energy



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

Central Maui Landfill



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

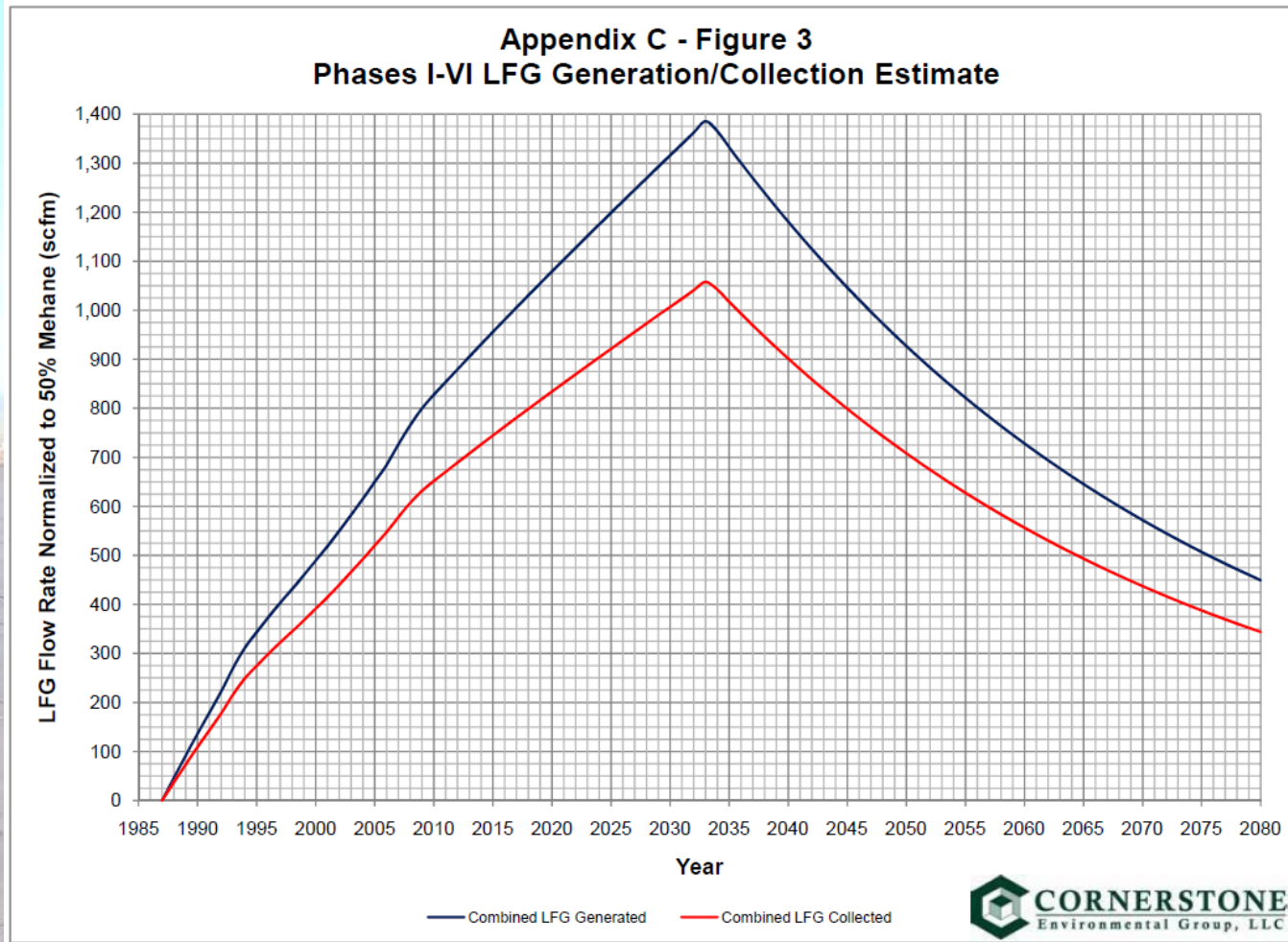
Gas Collection System
Distribution Line
~ 7,000 feet of pipeline

System Flare
65 million BTU

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

Methane gas – a precious resource – is wasted.

Landfill Methane Generation



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.

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