

**Developing a Financially Viable
340 kW Landfill Gas-Fueled Power
Project at the Montgomery
Regional Solid Waste Authority in
Christiansburg, Virginia**



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GkW Energy, Inc.**



MRSWA Mid-County Landfill

- Opened in 1979
- Stopped accepting waste in 2000
- Final closure in 2002
- 1.6 million tons of waste in-place
- 56 acres, 27 gas wells, ~ 210 scfm



GkW Energy

- Founded in 2007
- Five engineers
- One licensed Class A Contractor
- Provide LFGE project consultation services and process design/build/operate/maintain services



MRSWA and GkW

- Entered into a revenue sharing agreement
- Project costs and risks borne by GkW
- Both parties benefit through cooperation
- Challenge: Small (340 kW) & low power value



Virginia Operational LFGE Projects

22 electrical power projects
-average capacity 3.3 MW

- **11 direct-use (thermal) projects**



Power Value (\$/MWhr)

2008	2009	2010	2011
\$ 53.56	\$ 33.64	\$ 38.33	\$ 40.10

(PJM LMP for AEP Zone)



Blower Flare Station, October 2009



Blower Flare Station, October 2010



Keys to Financial Viability

- Reduce capital costs without compromising safety, reliability, compliance, or aesthetics
- Power sales options



Controlling Capital Costs

- Small project team
- In-house design and construction
- Utilizing local sources of materials and talent
- “Alternative” sources of equipment supply



Project Summary

- Contract finalized January, 2009
- Permits obtained January, 2009 – October, 2009
- Ground breaking November, 2009
- Ribbon-cutting October, 2010



Process Summary

- 265 kW generator set (Curtis Engines)
- 75 kW generator set (In-House)
- Minimal gas treatment











y's







Lessons Learned

- Large stationary engines are very different than mass-produced automotive engines
- Challenges with using LFG as a fuel extend beyond contaminants





Lessons Learned

- The meter does turn backwards!



Discussion

