



## Legislation Text

---

**File #:** 11-1344, **Version:** 1

---

Environmental Management Department recommending the Board authorize the Chair to sign Public Works Contract 014-PW-09/10-BOS for the development of a landfill gas utilization project at the Union Mine Landfill to STI Engineering of Silverado, California.

**FUNDING:** No County funding will be required to permit, obtain, install and operate the landfill gas to electricity system. This is a revenue generating project.

**Fiscal Impact/Change to Net County Cost:** No Change in Net County Cost

**Background:** At the request of the Environmental Management Department, the Procurement and Contracts Division issued a Request for Proposals (Attachment A) for landfill gas to energy services during the summer of 2009. These services will enhance the conversion of unused methane into electrical energy and fuel at the Union Mine landfill. Some of the electricity will be used onsite. Excess electricity will be sold and the County will receive royalties from the sale of excess electricity. The liquid hydrocarbon/petroleum fuel will also be sold and the County will also receive royalties from the sale. The savings realized by the use of generated electricity on site and the royalties will offset the costs associated with operating the landfill and waste water treatment plant.

Two (2) proposal responses were received; none from local vendors. Responses were received from the following firms:

Janecheck & Associates - Costa Mesa, CA  
STI Engineering - Silverado, CA

Proposal responses were evaluated by a team of personnel from the Environmental Management Department. The evaluation criteria consisted of proposal content and presentation; compliance with administrative requirements; experience, qualifications, and work plan; and total cost. Environmental Management personnel solicited and received input from knowledgeable State Water Resources Control Board personnel, landfill operators, the Local Enforcement Agent, and members of the El Dorado Solid Waste Advisory Committee. All contractor provided references were contacted and additional information was acquired. STI Engineering was the firm selected as their proposal response best meets the needs of the County.

The selection recommendation and a presentation by STI were presented to the Board on November 3 2009 (Legistar #09-1309). The Board:

- 1) Awarded the request for proposal (RFP) 09-961-119 for the development of a landfill gas utilization project at the Union Mine Landfill to STI Engineering of Silverado, California, and
- 2) Authorized the Director of Environmental Management, upon County Counsel and Risk Management approval, to execute a contract for same, said contract to include onsite electricity generation, usage and revenue sharing agreements.

Because of the unique nature of the negotiation of this atypical project, the contracting process required considerable time to complete. The contract went through several revisions by the

Department, County Counsel, Risk Management and the contractor to get to the agreed upon final product.

**Reason for Recommendation:** Currently, less than 30% of the landfill generated methane gas is converted to electricity. The rest is combusted in a flare without any energy recovery. Waste water treatment plant electricity usage far exceeds electricity produced by microturbines onsite. Converting all gas to electricity can significantly reduce the Countys cost to operate the plant. Additionally, new gas generation technology proposed by the potential contractor can significantly increase the quantity of gas produced. Injecting steam into small sections of the landfill enhances the conversion of cellulose to methane and reduces landfill volume.

The contractor will fund the entire permitting, installation and operation costs of the system. The contractor expects to realize a profit on the sale of electricity and/or fuel and in return provide an economic benefit to the County. Contractual County economic benefits are to include:

- Supplying all electricity for the operation of the Waste Water Treatment plant. Current annual electricity usage value is approximately \$250,000.
- Maintenance of landfill gas collection system and landfill cover. Current annual gas collection and cover maintenance cost is approximately \$25,000.
- A 3% royalty on the gross revenue from the sale of electricity to a utility (PG&E, SMUD or other). Utilizing existing gas production levels to produce 2 Megawatts of power would result in an annual royalty of approximately \$122,000 (based on a purchase price of \$0.10/kw/hr). If steam injection produces higher levels of gas that is also converted to electricity, higher royalties would be realized.
- A 3% royalty on the gross revenue from the sale of liquid hydrocarbon/petroleum to a refinery or other buyer. Utilizing existing gas production levels to produce 3,650,000 gallons of liquid hydrocarbon/petroleum fuel would result in an annual royalty of approximately \$213,000 (based on a purchase price of \$1.94/gallon). If steam injection produces higher levels of gas that is also converted to fuel, higher royalties would be realized.

In addition, onsite electricity generation by STI would minimize the need for the microturbine system. Current microturbine system maintenance costs are approximately \$100,000.

There are potentially additional sources of revenue. The steam injection technology could be applied to incoming municipal solid waste, should the landfill be reopened. Carbon credits from the conversion of landfill gas to electricity could be marketed. Should any of these or additional revenue sources be realized, the County would also receive a 3% royalty on gross sales receipts.

### **Agreement for Development of a Landfill Gas Utilization Project**

Should the environmental analysis result in approval of the landfill gas to energy project, the Agreement for the Public Works Contract No. 014-PW-09/10-BOS, for the development of a landfill gas utilization project will commence. The tasks involved in project development include:

Permitting. Contractor will assist County with complying with California Environmental Quality Act requirements by identifying significant environmental impacts and completing the appropriate process to avoid or mitigate those impacts. Contractor will file for, obtain and maintain compliance with any required changes to permits from California Department of Resources, Recycling and Recovery,

California Regional Water Quality Control Board, the El Dorado County Air Quality Management District and all other local, State and Federal permits that may otherwise be required.

Power Purchase Agreement. Contractor will negotiate, obtain, facilitate and comply with a Power/Product Purchase Agreement with an electrical utility company and/or liquid hydrocarbon/petroleum Purchaser.

Design, Install and Operate System. Contractor will conduct a Piezo-Penetrometer Test to profile landfill contents and map landfill to identify depth of refuse, gas plumes, perched liquids, pressure zones, cover layers and vacuum influence. Contractor will utilize mapping to design modifications of collection system, steam injection system and minimize fugitive landfill gas emissions. System will be phased in and periodically relocated to subsequent landfill sections as localized gas production declines. Contractor will install electricity generation equipment, gas to liquid hydrocarbon/petroleum equipment and storage tank(s). Contractor will provide all labor to operate system.

Maintain System, Landfill Cover and Groundwater Quality. Contractor will maintain the system and landfill cover to prevent stormwater infiltration and minimize landfill gas emissions. Contractor will employ the gas extraction to normalize landfill settlement to preclude stormwater ponding, concentrated stormwater runoff and erosion. Only the amount of steam required to enhance gas generation will be injected. Steam injected shall not increase the quantity of leachate generated nor degrade groundwater quality as determined by County staff.

Project Completion. Upon project completion, Contractor shall remove all contractor installed equipment, restore landfill gas collection system to its pre contract configuration and make any needed repairs to landfill cover.

**Action to be taken following Board approval:** Following Board approval and execution of agreement by the Chair forward to Environmental Management for distribution and implementation.

Contact: Gerri Silva, Director of Environmental Management Department