

ELECTRICAL CO-GENERATION FOR THE FORT BEND COUNTY JAIL

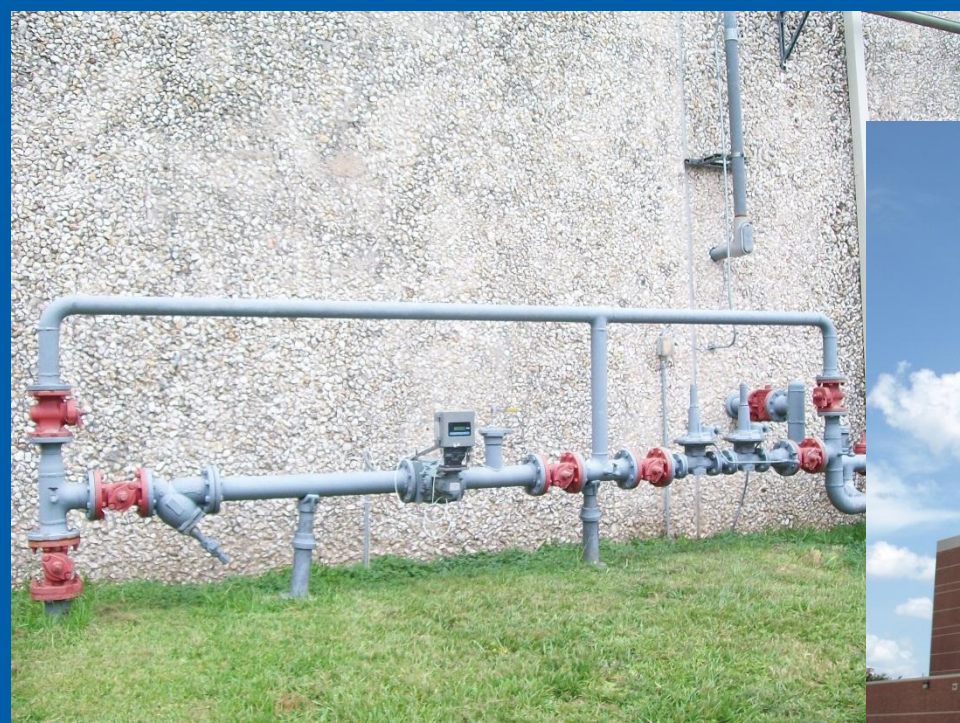
Update

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The Challenge

- Provide the County with a highly reliable and cost effective power supply for the jail.



The Solution

- Install a 1.98 MW natural gas driven combined heat and power plant
- Procure existing electrical infrastructure (poles & wires) from Centerpoint
- Remain Connected to the Grid
- Generate only what is needed



Proposed Solution

- **Provide Power For:**
 - The Jail (Both Towers)
 - Patrol/CID
 - Vehicle Maintenance
 - The Juvenile Detention Center
 - Radio Tower
 - Ancillary Buildings
- **Provide Hot Water for the Jail (Both Towers)**



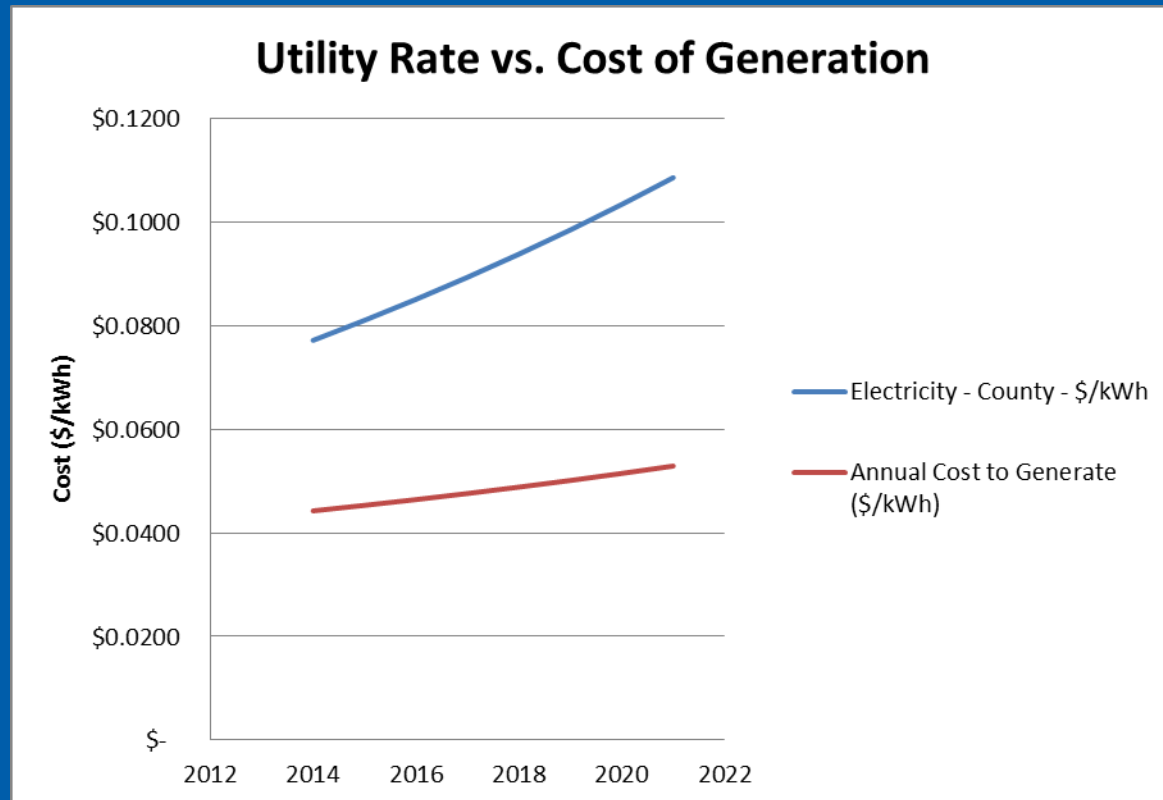
Proposed Solution

- **\$433,000 Annual Energy Savings**
- **\$3.44M Capital Investment**
- **7.94 Year Simple Payback**
- **15,000,000 lbs. of CO₂ Avoided**

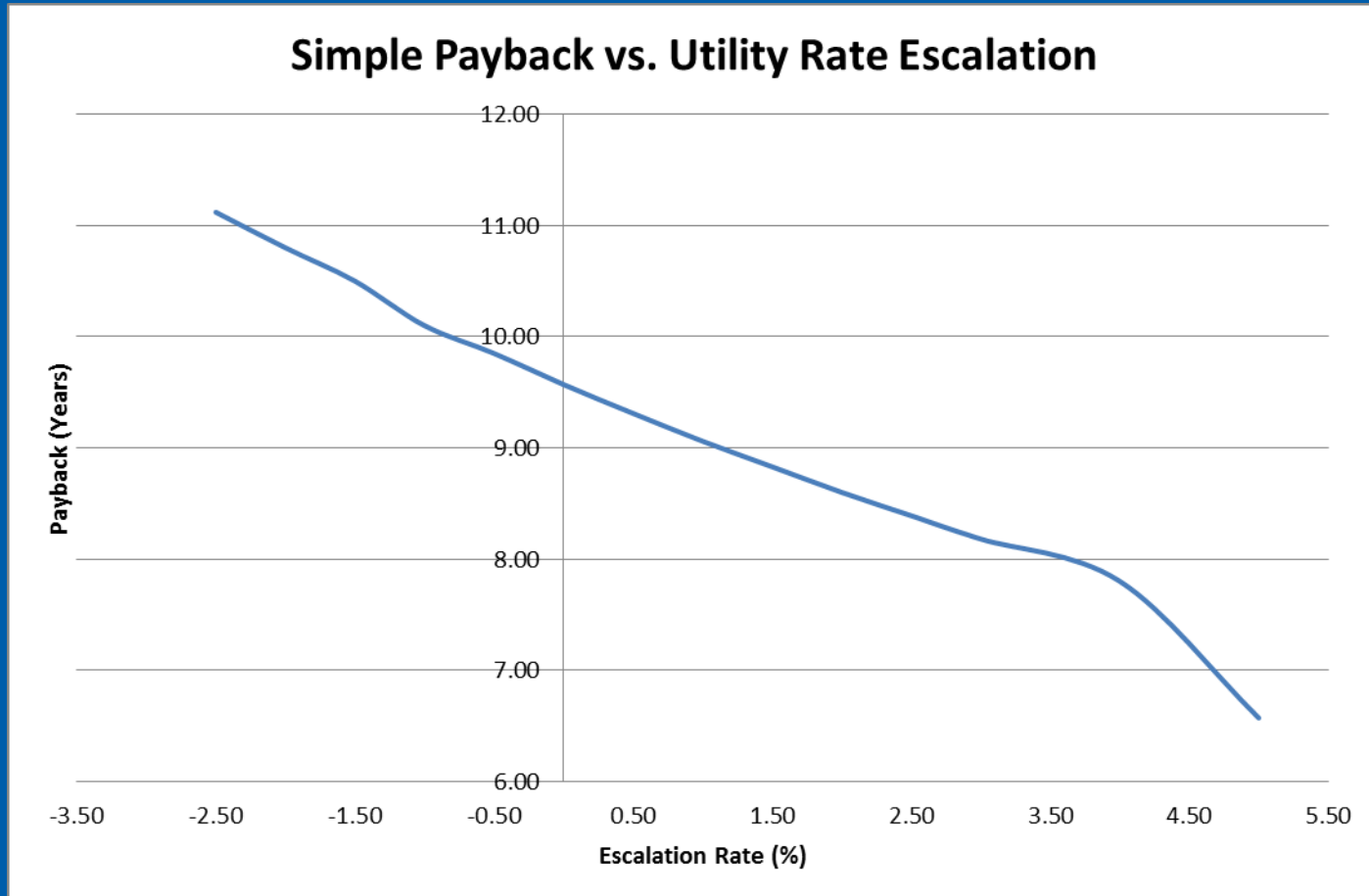


Utility Cost Details

- County may experience a 12% Electric Rate Increase in 2014
- Utility Rates Expected to Escalate Annually



Utility Rates Affect Payback



Payback Model

| | Natural Gas Rates | | |
|---|--------------------------------------|--------------|--------------|
| | % AVD | Historical | Future |
| Annual Cost of Fuel | | \$ 354,330 | \$ 248,031 |
| Annual Cost of Maintenance | | \$ 268,050 | \$ 268,050 |
| Average Cost to Generate (\$/kWh) | | \$ 0.0534 | \$ 0.0443 |
| Annual Avoided Cost of Electricity - County | 96% | \$ 875,260 | \$ 875,260 |
| Annual Avoided Cost of Electricity - City | Assumes 1 Week Annual Maintenance | \$ - | \$ - |
| Annual Avoided Cost of Electricity - Total | | \$ 875,260 | \$ 875,260 |
| Annual Avoided Cost of Natural Gas | | \$ 106,609 | \$ 74,626 |
| Annual Savings | | \$ 359,489 | \$ 433,806 |
| Capital Investment | | \$ 3,441,838 | \$ 3,441,838 |
| Simple Payback (Years) | | 9.6 | 7.9 |

Capital Investment

| Capital Investment | | | | Base Case |
|---|------|----|--------|-------------------|
| GenSet | | | | \$ 1,755,350.00 |
| Building(s) | 1800 | \$ | 129.22 | \$ 232,596.00 |
| CNP Transfer/Trip | | | | \$ - |
| MV Switchgear | | | | \$ 430,000.00 |
| Electrical Distribution - Centerpoint Lines | | | | \$ 87,000.00 |
| Install Primary Metering | | | | \$ 25,000.00 |
| Install County Metering | | | | \$ 50,000.00 |
| Relocate Hippler Electrical Service | | | | \$ 35,000.00 |
| On-Site Spares | | | | \$ 30,000.00 |
| Mechanical | | | | \$ 291,376.68 |
| Civil | | | | \$ 56,580.00 |
| Subtotal Cost | | | | \$ 2,992,902.68 |
| Contingency | | | | 15% \$ 448,935.40 |
| Total Capital Cost | | | | \$ 3,441,838.08 |

Demand Management

- The county system is connected in parallel with the grid.
- The county will receive power from the utility when the capacity of the CHP is exceeded or the CHP is down for maintenance.

Can We Generate More and Sell the Excess?

- Providers will buy excess power under a power purchase agreement.
- It costs about \$0.045/kWh to generate.
- ERCOT's Locational Marginal Price (LMP) for the Houston Zone (HZ) historically exceeds \$0.045/kWh only a few months per year.
- It is not a simple process and a broker is required.

Next Steps -

Complete Design Documents
Bid for Construction
Complete Construction

