



CITY OF
HAYWARD
HEART OF THE BAY

New Cogeneration Power System

March 20, 2012

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Utilities & Environmental Services**



WPCF Cogeneration System

- Why is this item on Legislative Business before City Council:
 - Design-build project
 - Innovative, clean and green technology
 - However, not in common use in wastewater treatment facilities (less than a dozen installations in California)
 - Technology and main system supplied by a single vendor
- Opportunity for staff to discuss these issues



Design-Build Contract

- Contractor's responsibilities:
 - Design and construct system
 - Monitor, operate and maintain system, based on terms of ten-year operations and maintenance agreement
- Reasons to use design-build process
 - Responsibility for all facets of cogeneration lies with a single entity – increases accountability
 - Highly specialized field
 - Cogeneration components are manufactured and delivered in modules - actual design work is minimal



Cogeneration to Produce Power and Heat

- What is cogeneration?
- Existing cogeneration at WPCF
- Why upgrade is needed
 - Old
 - Inefficient
 - Air Board Regulations



Cogeneration Technologies Selected for RPF

- Internal Combustion Engines (ICE)
- Fuel Cells



Internal Combustion Engines

- Uses a mechanical generator
- Among the first cogeneration technologies
- Currently in use at the WPCF
- Considered reliable - “tried and true”
- Currently in wide use nationwide



Fuel Cells

- Uses a chemical process
- Relatively new technology for digester gas conversion – used in natural gas applications for many years
- Considered very clean and green



Selection Criteria of Recommended Proposal

- Project understanding – 5%
- Project Team and Qualifications – 10%
- Operational Parameters – 10%
- Present Worth Life Cycle Cost Benefit – 65%
- Detailed Scope of Work – 5%
- Financial Status – 5%



Ranking of Proposals

1. WM Lyles Group: Fuel Cell
2. Overaa & Co.: Internal Combustion Engine
3. Stellar J: Internal Combustion Engine
4. GSE Construction: Internal Combustion Engine



Recommended Technology – Fuel Cell

- Cleaner and greener – lower pollutant emissions
- More consistent with City priorities of Clean and Green
- More consistent with City Council's sustainability goals and Climate Action Plan objectives
- Higher efficiency – more energy production from the same amount of available gas
- More cost effective – contract amount combined with potential PG&E grant funding



Risks Associated with Fuel Cell Option

- Limited experience with technology in wastewater treatment facilities
- Single manufacturer
- Expensive replacement stacks needed every five years



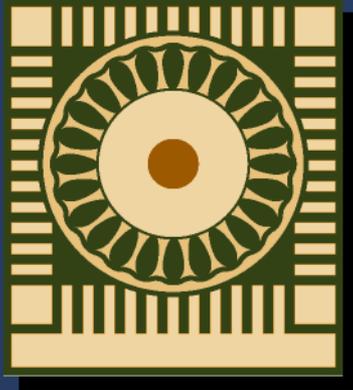
Risk Mitigation

- Staff believes risks can be reduced or mitigated to acceptable levels
- Will negotiate construction and ten-year operations and maintenance contract, with surety bonds, etc. to better protect City
- If negotiations are unsuccessful, staff will return with options for Council direction



Fuel Cell Installation at City of Tulare





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