Procuring and Financing Energy Efficiency

September 20, 2011
Oro Valley, Arizona

- Located just a few miles north of Tucson, Arizona
- Incorporated in 1974 with 1,500 residents
- Over 41,000 residents today
- Biotech and retail as dominant industries
Town Operations & Sustainability

- Sustainability
- Land Conservation
- Fleet Efficiencies
- Buildings
- Water Conservation
- Renewable Energy
- Waste Reduction
- Stormwater
- Procurement
Cost Saving Opportunities

$20,000  $477,893  $153,656  $1,300,000
TOV Electricity Power Expenditures
FY 07/08

Total: $1,229,186.80

- Buildings: $196,972.42
- Parks: $53,694.25
- Pool: $42,908.32

$935,611.81
Water Utility Pumps & Wells
Energy Efficiency
Conservation Block Grant
Town’s Energy Efficiency Strategy

Mission:

Mission Impossible:

The project cannot be a drain on the Town’s General Fund
...a strategic, design-build energy plan that is self-funded by virtue of its own cost reductions.
Project Financial Overview

- Project Financial Overview
- Pre-Project Energy Costs
- Savings Applied to Finance
- Post Project Energy Costs

Year 1 to Year 20:
- Current Utility & Maintenance Cost
- Post Project Investment
- Post Project Utility & Maintenance Cost
“If the M&V report reveals a shortfall in annual energy cost savings, the ESCO (Energy Services Contractor) is liable for such shortfall, and shall pay to the Town … the shortfall up to the life of the performance period.”
Energy Audit
### Evaluation of Energy Conservation Measures

- Interior & exterior lighting
- Lighting controls
- Water conservation
- Solar photovoltaic
- Solar thermal
- Rate analysis
- Low E window film
- Ceiling fans
- Direct Digital Controls (DDC)
- Central plant
- Cool roof
- HVAC zone control
- High Efficiency Packaged Units
- Variable Frequency Drives (VFDs)
- Preventative maintenance
- Demand-controlled ventilation
- Pump efficiency measurement
- Premium efficiency motors
- Data Energy Management
Project Elements

- Lighting Measures: Both interior and exterior
- Solar Panels
- Low E Window Film
- Ceiling Fans
- Motors and Pump Modifications
- Energy Data Management
- Water Conservation
- HVAC System: Zone control and high efficiency units
- Controls: direct digital controls (thermostat) and demand controlled ventilation (for air circulation)
- Solar Water Heating
- Landscaping
## Major Improvements

<table>
<thead>
<tr>
<th>Action Item</th>
<th>Units</th>
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<tbody>
<tr>
<td>Lighting Fixtures</td>
<td>1522</td>
</tr>
<tr>
<td>HVAC Unit Replacement</td>
<td>10</td>
</tr>
<tr>
<td>Water Conservation Fixtures</td>
<td>108</td>
</tr>
<tr>
<td>Energy Management Controls, Bldg’s</td>
<td>6</td>
</tr>
<tr>
<td>Low-E Window Film, Bldg’s</td>
<td>6</td>
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<tr>
<td>Pump/Fan Motors</td>
<td>10</td>
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<tr>
<td>Variable Frequency Drives</td>
<td>4</td>
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<tr>
<td>JDK Pool Solar Heating, Panels</td>
<td>46</td>
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<tr>
<td>New Pool Cover</td>
<td>1</td>
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<tr>
<td>New Ramada</td>
<td>1</td>
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<tr>
<td>Street Lighting, Fixtures</td>
<td>253</td>
</tr>
<tr>
<td>Solar PV Covered Parking, Panels</td>
<td>1344</td>
</tr>
<tr>
<td>Police HQ Solar Water Heating</td>
<td>1</td>
</tr>
</tbody>
</table>
**The Project Price Tag**

- **Solar Elements**  $2.4 million
- **Energy Efficiency**  $1.8 million
Core Principals

- The project must be 100% self funded.
- “Do no harm” to the General Fund
- Low Risk
Pool of Key Funding Sources

- Clean Renewable Energy Bonds
- Town Fund
- Grant
- Local Utility
- Energy Savings
Solar Financing

Source

CREBS: $2.4 M

Payoff Plan

Utility: $83K/year
Energy Savings: $71K/year
What are Clean & Renewable Energy Bonds (CREBs)?

- A unique funding opportunity to encourage development of renewable energy
  - Wind, biomass, geothermal, solar, landfill gas, hydropower and marine and hydrokinetic

- Tax credit bonds authorized under ARRA in 2009 and U.S. Treasury allocated $2.2 billion to 805 issuers
Applying for Clean & Renewable Energy Bonds (CREBs)

- Deadlines periodically throughout the year
- Applications submitted to the IRS
- Key elements of application:
  - Renewable energy project description
  - Engineer must certify viability of project
  - Project budget
Hiring Incentives to Restore Employment Act approved in 2009 provides a **DIRECT PAY subsidy**

- Initially structured as tax credits
- Bonds issued on a taxable basis with estimated 70% federal subsidy. Subsidy received on each bond payment date

100% of bond proceeds spent within three years or funds will be re-allocated

- September 2012 – keep an eye out!

Amortization period limited to 14-16 years

Davis-Bacon wage requirements
The Electric Utility and Performance Based Incentives

What is the bid process?

Why is it so important?
• Biggest funding source
• Locks in rate for energy production, per Kw

= must be producing, maximize Kw through tracking & maintenance
Energy Efficiency Financing

Source

- Grant: $164,200
- Town Funds: $1.6M

Payoff Plan

- Utility Rebate: $57K
- Energy Savings: $160K/year
Issuance of Municipal Bonds vs. Use of Contingency Reserves

- Total requested: $1,627,683
- Avoids interest expense of over $600,000
- Significantly improves payback period

- General Fund
- Highway Fund
- Water Utility Fund

Amounts:
- $309,260
- $423,197
- $895,226
Solar and Energy Efficiency Projects Working in Tandem
Entering into a Performance Contract

- Local Utility
- Clean Renewable Energy Bonds
- Energy Savings
- Grant
- General Fund
### Entering into a Performance Contract...

<table>
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<th>Description</th>
<th>Amount</th>
<th>Rate (%)</th>
<th>Enter %</th>
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<tbody>
<tr>
<td>Cost Subtotal</td>
<td>$158,974</td>
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<tr>
<td>✓ Overhead</td>
<td>$23,846</td>
<td>15%</td>
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<tr>
<td>✓ Profit</td>
<td>$14,308</td>
<td>9%</td>
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<td>Project Cost Subtotal</td>
<td>$197,128</td>
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<td>Contingency</td>
<td>$9,856</td>
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<td>Bonds (Actual Cost)</td>
<td>$4,534</td>
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<tr>
<td>Insurance (Actual Cost)</td>
<td>$986</td>
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<tr>
<td>Total Project Cost</td>
<td>$212,504</td>
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</table>
Pre-Construction Planning

- Staff Teams including all Departments
- Internal Planning & Progress Reports
- Getting the word out to the Public
The Construction Experience
The Construction Experience
Getting the Right Message Out to Staff and Public

- Elected Officials
- Media
- Town Staff
- Residents
Project Results: Energy Savings

Town Hall Campus
Energy Consumption Comparison

Monthly Electric Bills

<table>
<thead>
<tr>
<th>Month</th>
<th>FY 08/09</th>
<th>FY 10/11</th>
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</thead>
<tbody>
<tr>
<td>Oct</td>
<td>$17,000</td>
<td>$15,000</td>
</tr>
<tr>
<td>Nov</td>
<td>$16,000</td>
<td>$14,000</td>
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<tr>
<td>Dec</td>
<td>$15,000</td>
<td>$13,000</td>
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<tr>
<td>Jan</td>
<td>$14,000</td>
<td>$12,000</td>
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<tr>
<td>Feb</td>
<td>$13,000</td>
<td>$13,000</td>
</tr>
<tr>
<td>Mar</td>
<td>$14,000</td>
<td>$15,000</td>
</tr>
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</table>
Project Results: Energy Savings

- Actual Savings
- Weather Adjusted Savings
Putting “Found” Money to Work

- Replace aging equipment
  - Air Conditioning Units
  - Street Lights
  - Water Well Pump Motors
  - Pool Covers

- Purchase of New Facilities
  - Pool Ramada
  - Town Hall Ramada
  - Covered Parking
Project Results: Environmental

- Annual greenhouse gas emissions from 258 passenger cars, or
- CO₂ emissions from the electricity use of 184 homes for one year, or
- Planting and growing for 10 years 36,895 trees/year, or
- Greenhouse gas emissions avoided by recycling 461 tons of waste instead of sending it to the landfill
Project Results: Leadership
Project Results: Leadership and Education

FISCAL RESPONSIBILITY
- Utility Rebates & Clean Renewable Energy Bonds (CREBs)
- American Recovery and Reinvestment Act (ARRA) Funding
- Energy Conservation Project Savings
- Solar Power Generation
- Self-Funding Energy Conservation and Sustainability Program

HOW TO APPLY SOLAR FOR YOUR HOME OR BUSINESS

Video Screen
Contract *must* do’s
- Manage expectations
- The ESCO and utility as partners
- Contingency reserve
- Track your own results
- Internal and public outreach
Key Points to Take Home

- Project is 100% self-funded
- Energy cost savings are guaranteed by performance contractor for a price
- Invest in Town infrastructure instead of maintaining current utility expenses
- Know the pro’s and con’s of performance contracting
- Outreach. Outreach. Outreach.
Questions?

Thank you,

Brian P. Garrity, C.P.M., CPPB