Church Facilities – Recapturing Costs

A Stewardship Imperative?

Henry Conde
Parish Administrator
Galilee Episcopal Church
Virginia Beach, Virginia
March 29th & 30TH, 2017
BTW...

- The original facilities managers were considered holy men...

Numbers 3: 14–38

Levites were the first facilities managers
FACTS: Four irrefutable facts...

1. Every building / Facility will deteriorate at a rate of 1-4% (avg is 2%)

2. Concurrently, nearly every component of your facility will be replaced or have a required major repair/overhaul (Do you know which ones / when?)

3. All of the above will require $$$

4. Most Churches are financially strained
The Strain: Overall Costs

1. Personnel

2. Healthcare…and rising

3. Facilities Costs

4. Revenues

(Note- Buildings consume 40% of the energy and 70% of the electricity produced in the U.S.)
**Benchmarks: IFMA / NACBA**

- IMFA (International Facilities Managers Assoc.) recommends a budget allocation for maintenance and repairs to be in the 2%-4% range of the aggregate CRV. Huhhh?

- CRV=Current Replacement Value of Facility

- Replacement Cost for Facilities (est.$150.00/SF)*
  
  (*depends on geographical location)
Calculation: Example

1. Facilities size 40,000 SF

2. Replacement Costs of $150.00/SF CRV IMFA

3. CRV = 40,000 SF x $150.00 = $6,000,000

4. CRV Index = $6,000,000 x 2.0%* = $120,000**

5. Maint Costs per SqFt = $120,000/40,000 SqFt = $3.00/SF

(* 2–4% recommended as Repair and Maintenance factor / NOTE: Typical annual facility deterioration factor is 2% on avg.
  **Assumes the facility has been maintained, otherwise you may need a factor between 4-5%)
What does this ($3.00/SqFt) mean?

- City Government: $2.20 /SF
- Education: $2.28 /SF
- Banking: $2.47 /SF
- Healthcare: $2.85 /SF
- Churches: $1.78 /SF (Mid Atlantic Mean)
- Total respondents: $2.21 /SF (Mid Atlantic Mean)

(Avg 42% Preventive maintenance / 58% Repairs)
So...Let's start with the basics
Check/Ensure you are on Schedule 5C!

For service emergencies and power outages please call

Meter and Usage

Current Billing Days: 32

Billable Usage
Schedule 5C 12/08-01/09
Total kWh 7920

Measured Usage
Meter: 0200052133 12/08-01/09
Current Reading 7415*
Previous Reading 7316
Total kWh 7920
Current Reading .31*
Demand 24.80
Multiplier: 80
*Estimated Reading

Usage History

<table>
<thead>
<tr>
<th>Mo</th>
<th>Yr</th>
<th>kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>16</td>
<td>8800</td>
</tr>
<tr>
<td>Feb</td>
<td>16</td>
<td>7600</td>
</tr>
<tr>
<td>Mar</td>
<td>16</td>
<td>7280</td>
</tr>
<tr>
<td>Apr</td>
<td>16</td>
<td>7120</td>
</tr>
<tr>
<td>May</td>
<td>16</td>
<td>7360</td>
</tr>
<tr>
<td>Jun</td>
<td>16</td>
<td>10560</td>
</tr>
<tr>
<td>Jul</td>
<td>16</td>
<td>14080</td>
</tr>
<tr>
<td>Aug</td>
<td>16</td>
<td>14800</td>
</tr>
<tr>
<td>Sep</td>
<td>16</td>
<td>13760</td>
</tr>
<tr>
<td>Oct</td>
<td>16</td>
<td>10560</td>
</tr>
<tr>
<td>Nov</td>
<td>16</td>
<td>6560</td>
</tr>
<tr>
<td>Dec</td>
<td>16</td>
<td>6960</td>
</tr>
<tr>
<td>Jan</td>
<td>17</td>
<td>8080</td>
</tr>
</tbody>
</table>

Important Customer Information from Dominion Virginia Power

Help a family in need through EnergyShare - add $1,2,5,10,20,25 or 35 to your payment.
Now...how can I save $$ in order to spend it on my facility?

- **Lighting**: We all have...

  - **Fluorescent Tubes**: Mercury based, degrade, disposal
  - **CFL: a.k.a Curly Q’s**: More mercury than fluorescent tubes
  - **Incandescent lights**: Short Lifespan / Not efficient
  - **Metal Halide**: Good lighting / HOT / Not efficient
  - **High Pressure Sodium**: Good Lighting / Not efficient
  - **Halogen**: HOT!!! HOT!!! Wattage hogs
LED...Benefits & Qualities

Source: TheSimpleDollar

How green are LEDs?
An Energy Department study recently determined that LEDs have a much smaller environmental impact than incandescent bulbs. Incandescent bulbs release 90 percent of their energy as heat, which has an impact on their lifespan. Additionally, LEDs lack toxic mercury, making it easier to dispose of them when they do eventually go out.

How does the brightness of LED lighting compare to incandescent lighting?
LED lights are BRIGHT. In fact, when you replace your incandescent light bulbs for LEDs, you’ll notice that LED lights resemble daylight compared to the yellow glow of incandescent. Consistent quality and brightness through the life of the bulb.

EnergySTAR and TheSimpleDollar
Good Stewardship...

- Fluorescent = Mercury
- LED = Recycle / Safe
LED...Costs Comparison...

Energy Cost Per Year

- **Incandescent**
  - Watts: 61
  - Cost to operate: 6.14
  - Dimmable
  - Upgrade to halogen and save up to 33% more energy

- **CFL**
  - Watts: 11
  - Cost to operate: 1.32
  - Some are dimmable
  - Multiple color temperatures
  - Recycling available

- **LED**
  - Watts: 09
  - Cost to operate: 1.08
  - Most are dimmable
  - Multiple color temperatures
  - No mercury
  - Instantly bright

*Based on the average of 11 cents per kWh and 6 hours of operation per day. **Some costs applied after recycling.
Recapturing Energy Costs:
Light Emitting Diode (LED)...an ally

Quick Case Study: Exit Signs
- A Code Requirement
- They must be on 24/7 365 days
- Avg 40 Watt each / LED 3 Watts replacement
- Galilee 46 signs
- $31.00 savings over incandescent (Dominion Power est.)

- Annual Savings .......$31.00 / Exit Sign
- # Exit Signs ..........X 46
- Potential Savings $1,426 annually
Recapturing Energy Costs: Occupancy Sensors ...Great ROI !!!

<table>
<thead>
<tr>
<th>Application</th>
<th>Potential Energy Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office (Private)</td>
<td>25–35%</td>
</tr>
<tr>
<td>Offices(open spaces)</td>
<td>20–25%</td>
</tr>
<tr>
<td>Rest Rooms</td>
<td>30–75%</td>
</tr>
<tr>
<td>Corridors</td>
<td>30–40%</td>
</tr>
<tr>
<td>Storage Rooms</td>
<td>45–65%</td>
</tr>
<tr>
<td>Meeting Rooms</td>
<td>45–65%</td>
</tr>
<tr>
<td>Conference Rooms</td>
<td>45–65%</td>
</tr>
</tbody>
</table>
Recapturing Energy Costs: Replacement Strategy...be relentless

- Computers
- Monitors / Screens
- Copiers
- Washers and Dryers
- Hot Water Heaters
Duct Testing and Sealing

- Customers with 10 Megawatts or less
- Lifetime energy savings 15-20%
- Eliminates hot and cold spots
- Reduction of the risk of pollutants entering and circulating through your facility
- Improved Airflow
Recapturing Energy Costs: Duct Testing and Repairs

- Main Attic Duct
  - Before: Condensation
  - After: Repaired / No Leaks

- Repaired / No Leaks
  - After: Sealed
Recapturing Energy Costs: Contact Information

Chris Anderson
Utility Project Manager
chris@dominionconservation.com
Cell 804-475-8374

Jim Zolty
Utility Project Manager
jim@dominionconservation.com
o 804-399-7806 / m 804-592-7455
## Recapitulating Energy Costs:
Small Business <100MW: Rebates!!

<table>
<thead>
<tr>
<th>Fixture replacement program</th>
<th>=</th>
<th>Rebate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2x4 Fixture</td>
<td></td>
<td>$ 65</td>
</tr>
<tr>
<td>2x2 Fixture</td>
<td></td>
<td>$ 50</td>
</tr>
<tr>
<td>Surface Mount</td>
<td></td>
<td>$ 37</td>
</tr>
<tr>
<td>Exit lights / Signs</td>
<td></td>
<td>$ 28</td>
</tr>
</tbody>
</table>
Recapturing Energy Costs: Contact Information

- **Just one of many…. Working the SBIP/ Religious Institutions**

- **Eric Sweeney**
  
  *Project Manager*

  esweeney@designelectricinc.com

  *Cell 804-774-0751*
HVAC Replacements 13–14 EER: Incentives / Rebates

https://www.dom-vendor.com/non-residential-programs

<table>
<thead>
<tr>
<th>Unitary Air Cooled Heat Pumps</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Split Units &lt; 60K Btu/h (5 tons)</td>
</tr>
<tr>
<td>All Single Package Units &lt; 60K Btu/h (5 tons)</td>
</tr>
<tr>
<td>≥ 60K and &lt; 112K Btu/h (5 – 11 tons)</td>
</tr>
<tr>
<td>≥ 112K and &lt; 245K Btu/h (11 – 20 tons)</td>
</tr>
<tr>
<td>≥ 245K and &lt; 756K Btu/h (20 – 63 tons)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water Cooled Chillers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotary / Screw / Scroll Type &lt; 75 tons</td>
</tr>
<tr>
<td>Rotary / Screw / Scroll Type ≥ 75 and &lt; 150 tons</td>
</tr>
<tr>
<td>Rotary / Screw / Scroll Type ≥ 150 and &lt; 300 tons</td>
</tr>
<tr>
<td>Rotary / Screw / Scroll Type ≥ 300 tons</td>
</tr>
<tr>
<td>Centrifugal ≥ 150 tons</td>
</tr>
<tr>
<td>Centrifugal ≥ 150 and &lt; 300 tons</td>
</tr>
<tr>
<td>Centrifugal ≥ 300 tons</td>
</tr>
<tr>
<td>Magnetic Bearing ≤ 150 tons</td>
</tr>
<tr>
<td>Magnetic Bearing ≥ 150 and &lt; 300 tons</td>
</tr>
<tr>
<td>Magnetic Bearing ≥ 300 tons</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Cooled Chillers</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Sizes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Geothermal Heat Pumps</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Sizes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Variable Frequency Drives</th>
</tr>
</thead>
<tbody>
<tr>
<td>For HVAC Equipment Only</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>HVAC Economizers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dual Entalpy Economizers &lt; 10 tons</td>
</tr>
<tr>
<td>Dual Entalpy Economizers ≥ 10 tons</td>
</tr>
</tbody>
</table>
Recapturing Costs: “Point of Use” Hot Water Heater

- Replace traditional large 24/7 Hot Water Heaters with instant / on demand “point of use” unit(s) only where required.

(65 Degrees to 145F)
Recapturing Costs: Plug Load vs. Phantom Load

- Plug Load = Regular equipment plugged into the outlet (approx 20% of facility electrical use)

- Phantom Load = is the continual use of energy for plug load (microwaves, computers, TV’s) even when turned off.
  - News FLASH!!!... 75% of plug load energy is used when an item is “OFF”
  - What to do? ..Unplug, minimize use or install plug load adapters
Never call the plumber when you need him!...unless_____?
  ◦ That goes for the Painter, Electrician, IT Guy, etc.

  ◦ Why? or Why not?
  ◦ Example: Commercial hourly rate $135
    ▪ Residential hourly rate $ 90

  ◦ Negotiate a “Single Source - Dynamic Pricing”
Do these strategies work year over year?

Monthly Electricity Costs in $$

- 2016
- 2015
- 2017
Bonus Benchmark....Total Utility Costs per SqFt

- **Electricity, Gas and Water per SqFt**
  - **2010**: $1.44
  - **Mid Atlantic**: $1.25 (Benchmark)
  - **2014**: $1.02
  - **2015**: $.83
  - **2016**: $.76
Recapturing Costs...A Stewardship Imperative? In summary...Absolutely...Yes!

“Recaptured Costs” means a “Sustainable Church Facility”
Call /Email me anytime … (757) 438-9078 cell
Henry.Conde@galileechurch.net