

Energy Performance Contract



- Belknap Campus, Health Sciences Center, and Shelby Campus
- \$46.2 million of energy efficient facility improvements
- 88 buildings / 6.2 million square feet of space
- Will generate \$64 million of guaranteed savings over the 14+ year term
- Equivalent to \$4.4 million of annual savings, or \$12,086 per day
- If the guarantee is not met, Siemens will pay to cover the shortfall

Reduction in Carbon Footprint



Annual Reduction in Greenhouse Gases

- 92,371,102 lbs. of carbon dioxide (CO₂)
- 152,175 lbs. of nitrogen oxides (NO_x)
- 463,175 lbs. of sulfur dioxide (SO₂)

Annual Equivalent Reduction

- 7,690 cars driven for a year, or
- 296 acres of forest preserved from deforestation, or
- 222 rail cars of coal

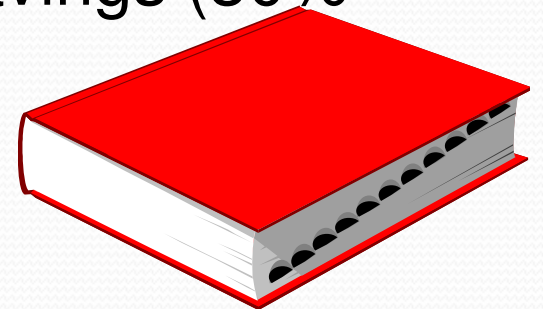
UofL Baseline Energy Use (2009)

Campus	Electricity	Coal	Natural Gas	Total
Health Sciences	\$2,924,510	\$1,026,116	\$109,668	\$4,060,294
Belknap	\$4,713,973	\$502,281	\$1,345,050	\$6,561,304
Shelby	\$174,775	\$0	\$92,257	\$267,032
TOTAL	\$7,813,258	\$1,528,397	\$1,546,975	\$10,888,630

- Energy costs are rising 5-7% annually (Public Service Commission approved 11/2011 a 18% rate increase phased in by 2016)
- LG&E provides UofL's natural gas and electricity (with 98% of electricity generated from coal)
- Central heating system for Health Sciences campus is jointly owned by UofL, Norton's Children Hospital, and Jewish Hospital
- UofL is committed to be carbon neutral by 2050 (American College & University Presidents' Climate Commitment)

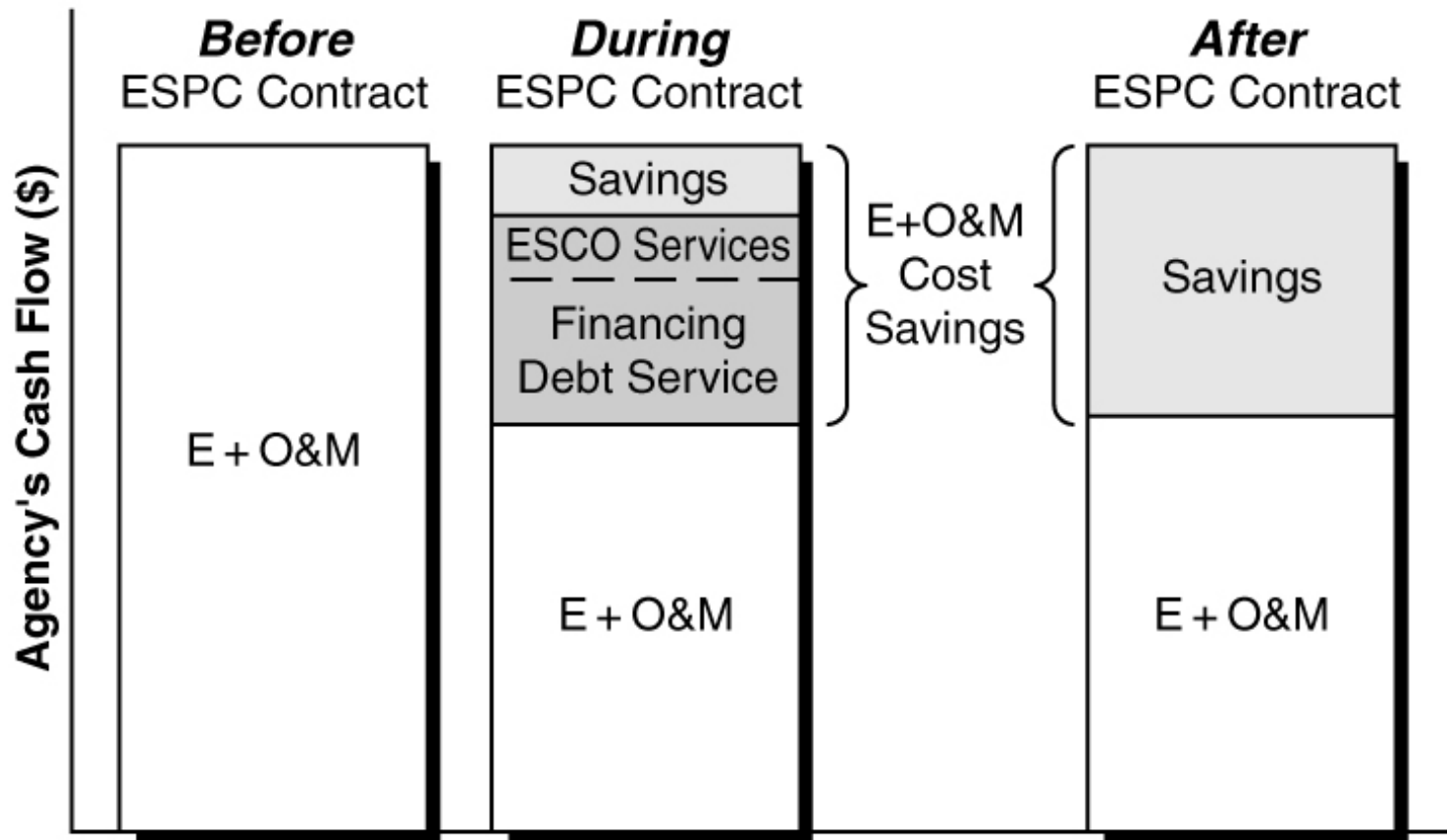
Definition of Energy Saving Performance Contract

- **ESPC** is a no-upfront-cost contracting method. The contractor incurs the cost of implementing energy conservation measures (ECM) and is paid from the energy, water, wastewater and operations savings resulting from these ECMs.
- Turnkey solution—evaluation, assessment of alternatives, design, construction, commissioning
- Maximum contract 15 years (state limit)
- Risk sharing with guarantee of cost savings (30% at UofL)



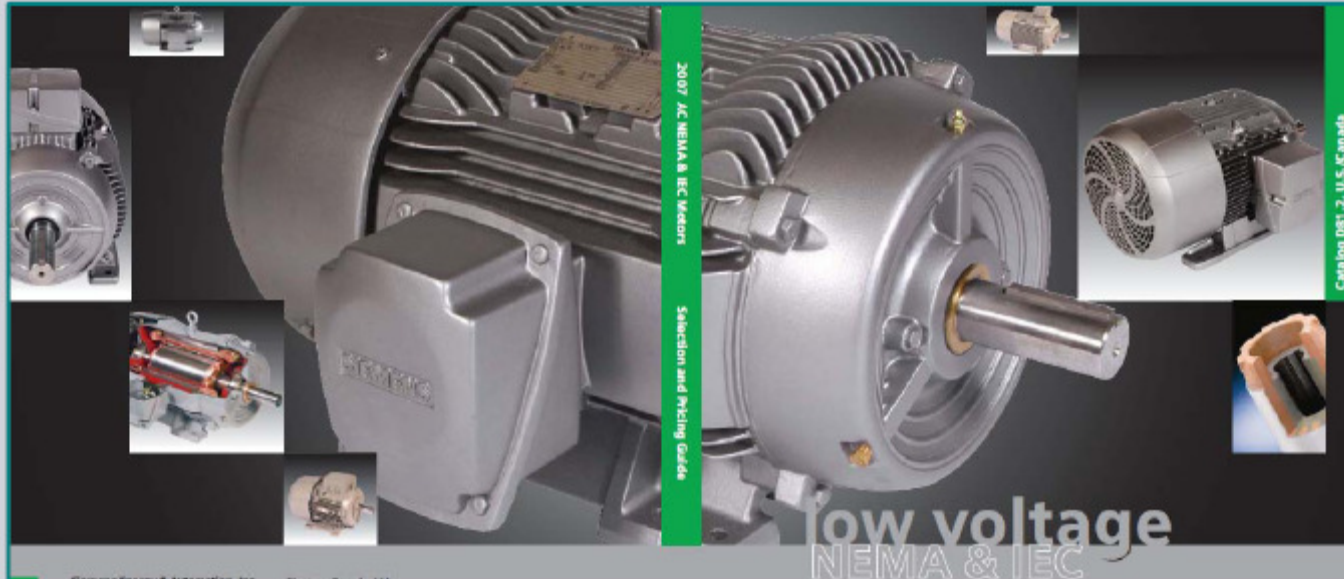
Reallocate the University's Utility Bill

- ✓ Pay a lower utility bill
- ✓ Pay the contractor
- ✓ Achieve cost savings for the government



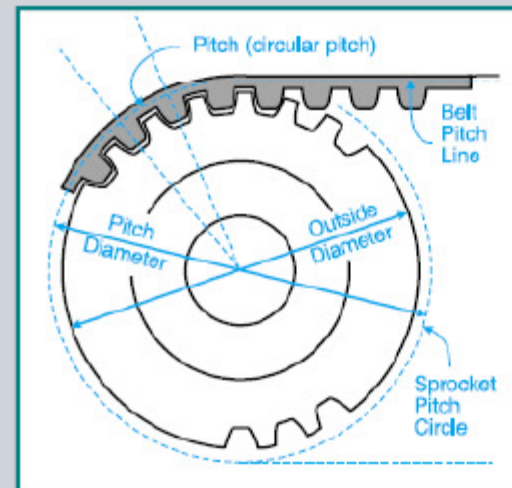
Energy Efficient Motors

- Replaced 259 older motors with new premium efficiency motors
- Saves an average of 5% of the previous energy consumption
- Annual energy savings: \$35,650



Energy Efficient Belts for Motors

- Replaced 213 standard V-style belts with new non-slipping synchronous belts for fan motors with variable frequency drives.
- Saves an average of 8% of the previous energy consumption
- Annual energy savings: \$46,037



Low Flow Showerheads

- Replaced 616 shower heads with low flow (2.0 gallons per minute) showerheads
- Reduces hot and cold water consumption for showering by an average of 11%
- Annual energy savings: \$34,444



Low Flow Faucet Aerators

- Replaced 2,042 faucet aerators with low flow, pressure independent aerators
- Reduces water consumption at sinks by an average of 58%
- Annual energy savings: \$159,488



Insulated Steam Valve Jackets

- Installed 1,152 insulated steam jackets on steam valves
- Reduces heat loss at the valve by 90%
- Annual energy savings: \$327,020



Energy Efficient Lighting

Installed the following:

- 117,483 fluorescent lamps for interior lighting
- 41,714 electronic ballasts
- 1,729 induction lamps for exterior lighting
- Reduces lighting energy consumption by 14%
- Annual energy savings: \$915,350



Occupancy Sensors for Lighting

- Installed 2,011 occupancy sensors
- Reduces lighting energy consumption by 20-40%
- Annual energy savings: \$97,550



Conversion to Natural Gas

- Remove old coal-fired boiler (~500,000 tons per year)
- Central Steam and Chill plant
- 1st natural gas boiler installed October 2010, 2nd backup boiler currently being installed
- Cost of each boiler is \$2 million
- Estimated cost savings of \$2.3 million/year

