



## Response to Questions on the 2016 LOBs

**Request By:** Supervisor Storck

**Relevant LOB(s):** N/A

**Question:** Describe the energy savings that the County has generated and what other opportunities there are going forward.

**Response:**

The Facilities Management Department's (FMD) major on-going energy saving strategies include:

**Building Energy Management Systems (BEMS)** - FMD installs and maintains remote computer controls for lighting, heating, ventilating and air conditioning (HVAC) systems in County buildings. There are 98 buildings currently under computer control. These building are generating 20-35 percent in energy savings from shutting down equipment when not needed.

**System Replacement** - When implementing infrastructure replacement and upgrade projects, FMD routinely incorporates high efficiency equipment (motors, chillers, boilers, and packaged cooling equipment) to replace old, inefficient systems. New system designs evaluate existing energy use, identify opportunities for energy savings and provide energy modeling. The energy savings are sometimes difficult to quantify, but this strategy focuses staff on energy conservation on a daily basis. In addition, FMD chooses construction materials and finishes based on both costs and overall energy and environmental impacts.

**Utility Contracts** – Between December 2012 and June 2013, FMD negotiated a new natural gas contract for County facilities. Prior to December 2012, FMD costs for natural gas were as high as \$2.542 million annually. Under the new contract, the annual estimated savings amount for natural gas is \$1.038 million for the first year or \$3.114 million over the three-year period of the contract.

**“Energy Cap” Energy Tracking Software** – This is a computer software package that provides FMD with a comprehensive database of building utility information. This database is used for analyzing the County's energy consumption. Each utility bill for each building is mechanically uploaded into the program monthly. The data is then analyzed using the reporting features of the program. The information generated allows FMD to identify high energy use buildings, benchmark buildings, identify outliers, compare current bills with a normalized baseline year, track changes in a building's energy use from year to year, and forecast energy usage for each utility.



**Temperature set-point in County buildings** – FMD establishes and regulates temperature set points in County buildings to maintain comfort and balance energy consumption. The indoor summer temperature range is 75 - 77° F and the indoor winter temperature range is 67 - 69° F. These temperature ranges are a result of a reduction that was included in the FY 2010 Adopted Budget Plan. The estimated savings amount from this adjustment was equal to \$230,000.

**New Building Designs** – FMD reviews new building designs prior to construction to assist the Department of Public Works and Environmental Services in ensuring buildings are highly efficient once constructed. This includes review of architectural systems (window types, insulation, and passive solar designs), mechanical systems (chillers, boilers, controls, etc.) and electrical systems (lights, occupancy sensors, day light harvesting, and generators).

**On-Going Preventive Maintenance** - FMD technicians systematically audit HVAC and plumbing systems to identify and correct deficiencies and gain energy efficiency. Preventive maintenance includes but is not limited to testing and calibrating, checking dampers, replacing filters, testing burner drafts, assessing fans and motors, cleaning condenser and cooling coils, and checking and testing set points.

**Building Assessments** - In FY 2014 and FY 2015, FMD contracted for a total of 48 building assessments. The assessments were completed by third party engineering firms. The work included a holistic evaluation of the building subsystems and the building envelope (the physical separator between the interior and exterior of a building) to include identification of systems and components that can be replaced to improve energy performance.

Energy savings are primarily realized through Infrastructure Replacement and Upgrade projects. Specific examples of recent projects completed since FY 2012 include:

- Federal Energy Efficiency and Conservation Block Grant projects were completed at seven facilities. The projects included heating, ventilating and air conditioning (HVAC) system upgrades, installation of building energy management systems (BEMS) and installation of lighting controls.
- Completed Energy Performance projects to replace HVAC components such as air handlers, boilers, pumps, chillers, motors, Variable Air Volume (VAV) boxes, air handling units, split systems, furnaces, air conditioning units, and Roof Top Unit (RTU) fans. These projects combined Infrastructure Replacement and Upgrade requirements with energy saving strategies.
- Retrofitted florescent and High Intensity Discharge 24/7 lighting to LED. To date, over 3,000 lamps have been changed. Recent project sites include but are not limited to Fairview Fire



Station, Adult Detention Center, Fairfax Courthouse, Government Center, and Huntington Community Center.

- Completed Energy Performance projects to improve building envelopes at four sites. The projects included the replacement of skylights, caulking of windows and expansion joints, window replacement, and replacement of wall flashing. These projects combined Infrastructure Replacement and Upgrade requirements with energy saving strategies.
- Completed construction to install interlocking bay doors at some fire stations. When the bay doors open the HVAC system in the bay shuts off so as not to condition outside space. A computerized tracking system to monitor bay doors was implemented as part of this project.

FMD will continue to closely manage the County's energy use. The department's priorities include aggressively pursuing efficiency changes to mechanical and electrical systems by targeting "no" and "low cost" modifications, as well as replacing energy excessive building subsystem equipment within the scope of the annual Infrastructure Replacement and Upgrade project budget.