

# Martha Jefferson Hospital: Implementing the Design

VCU Energy & Sustainability  
Conference

January 30, 2013

*Martha  
Jefferson* Hospital

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# History

- Martha Jefferson is a 100+ year old community hospital in Charlottesville, VA
- Moved into a complete replacement facility on August 28<sup>th</sup>, 2011
- Sustainability principles guided facility design and construction resulting in USGBC LEED Certification

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# We were...

- 176 licensed beds
- 320,000 sq ft on 8 acres
- 30+ year old physical plant



# Replacement Hospital Facility

- Hospital – 430,000 sq ft, 40 acres
  - 176 licensed inpatient beds
  - 9 Operating Rooms
  - 6 Cardiovascular Procedure Rooms
  - Data Center
  - No Laundry
- Cancer Center – 60,000 sq ft MOB
  - 2 Oncology Linear Accelerators
  - Domestic cold water is only shared utility





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# Hospital CUP

- 3 CB Firetube Boilers – 400, 400, & 300 HP
- 2 Trane Centrifugal Chillers – 1000 Ton each
- 1 Backup Air Cooled Chiller – 400 Ton
- 1 Multistack Heat Recovery Chiller– 400 Ton cooling capacity
- Hot Water (Potable & Heating) provided by 3 Maxi-Therm Heat Exchange Units
- Trane BAS – Tracer ES





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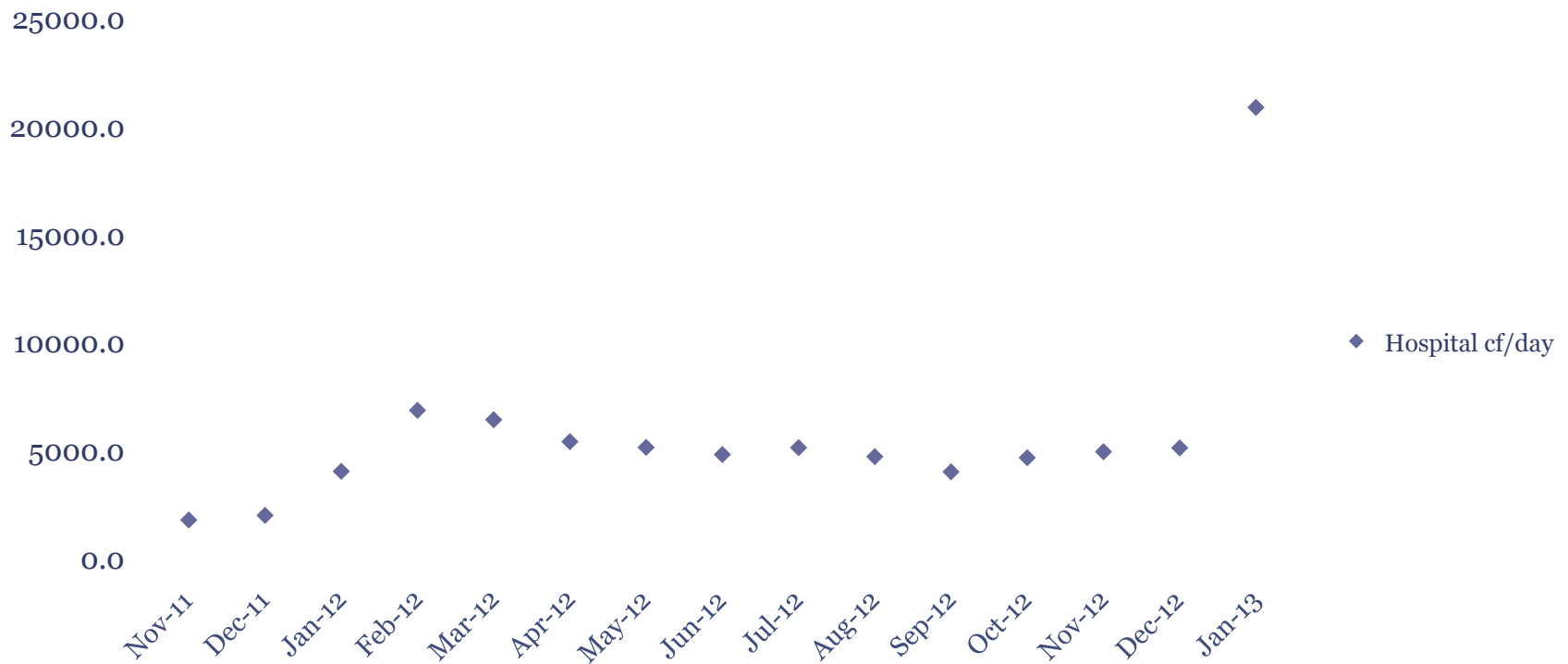
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# Energy Saving Measures Completed

- Climbed the learning curve
- Maximized heat recovery chiller performance
- Lighting controls adjusted in Parking Garage
- Tuned Maxitherm output to true demand and reduced boiler usage
- Programmed off-hours HVAC Setbacks in non-clinical areas
- Temperature adjustments in ORs
- Started benchmarking

# Natural Gas - Year 1 Use

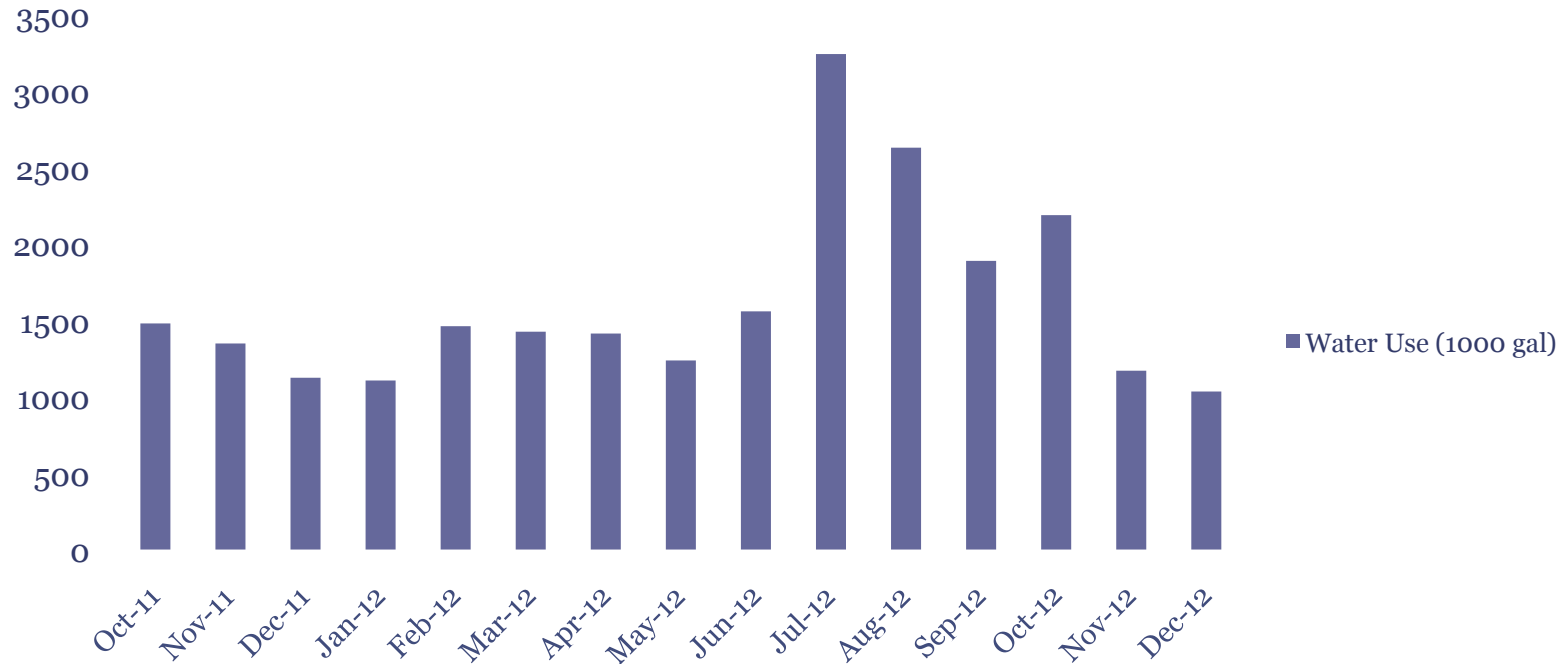
## Hospital Gas Use (cf/day)





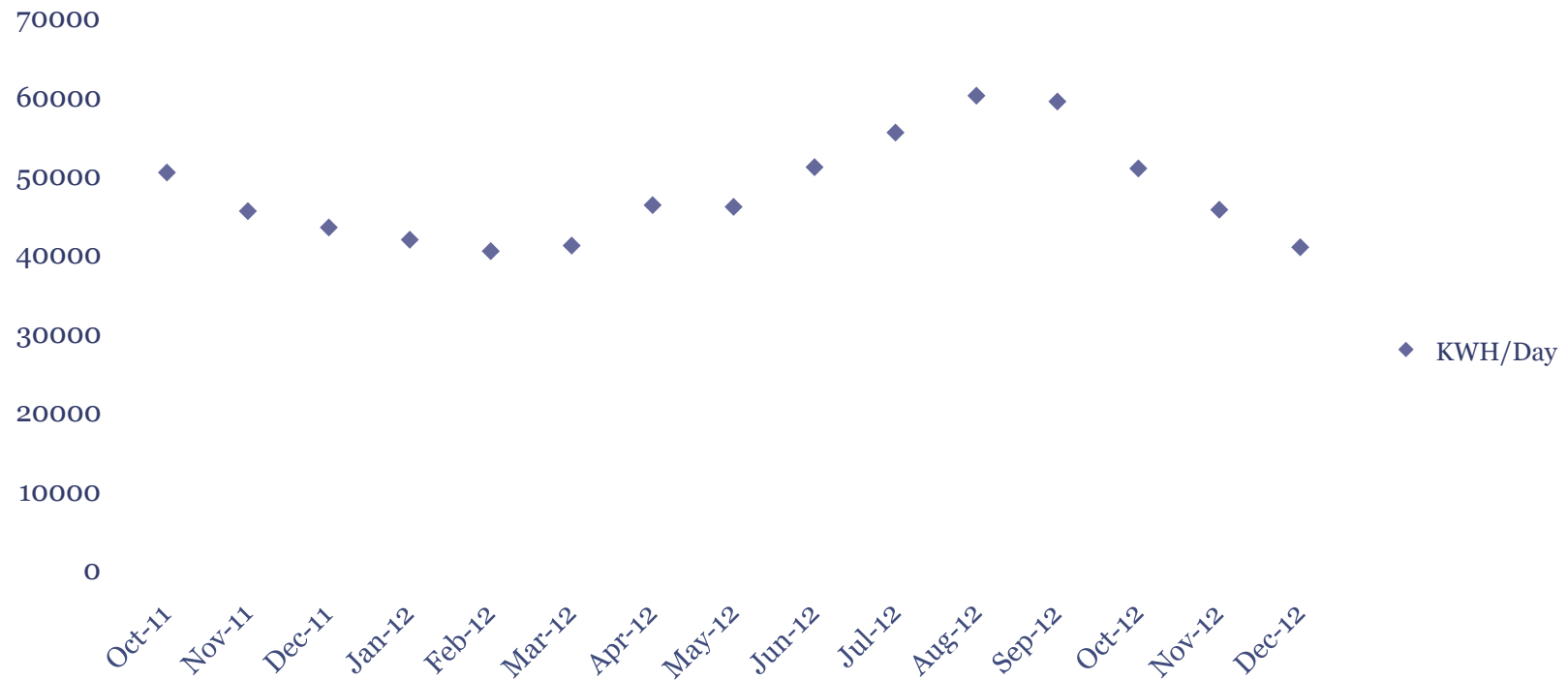
# Water - Year 1 Use

## Water Use (1000 gals)



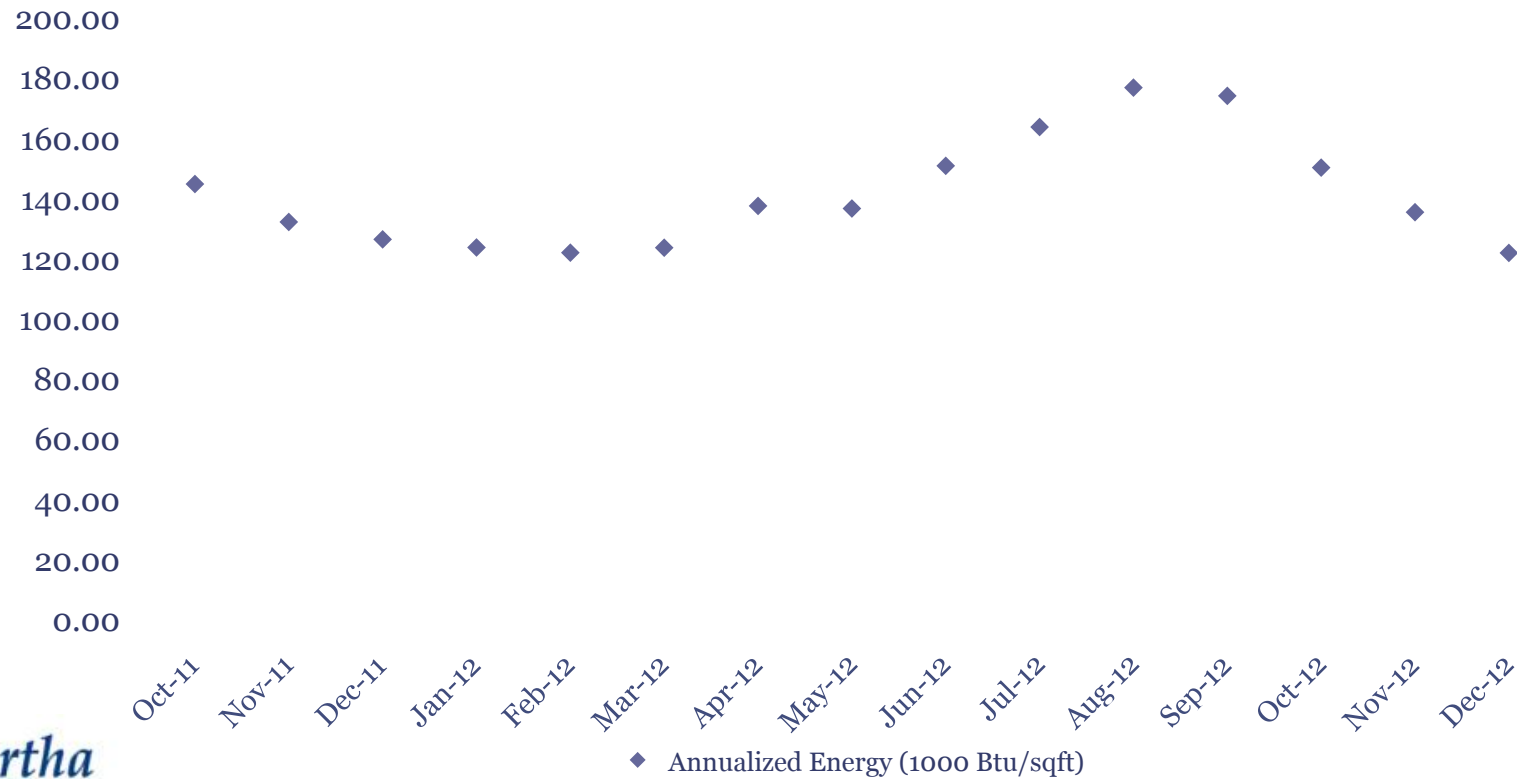
# Electrical - Year 1 Use

KWH/Day



# Energy - Year 1 Use

## Annualized Energy (1000 Btu/sqft)





# Energy Benchmark

- DOE EIA 2012 Benchmark for New Hospitals
  - Zone 3 – 130 (1000 Btu/sqft)
  - Only covers Heating, Cooling, Water Heating, & Ventilation
- DOE EIA 1995 Commercial Building Energy Consumption Survey
  - Uses account for 61% of energy used in Zone 3
- MJH Average for all uses: 142.5

# Next Steps

- Off-hours OR HVAC set-backs
- Improved schedules for interior lighting
- PC Power Schemes for non-essential computers
- Investigate wind energy given location
- Pursue further benchmarking via Energy Star or Practice Greenhealth

# Questions?



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