



University of Massachusetts Building Authority

Report to the UMass Board of Trustees
September 2008

Two topics for the September 08 UMBA Report:

- 1. A discussion of the outcomes of the three spring bond issues:
 - Series 2008-1 and 2008-A (April 24)
 - Series 2008-3 and 2008-4 (June 10)
 - Series 2008-2 (June 30)
- 2. A description of the recent efforts of the Authority to construct “green” buildings for the University.

Series 2008-1 and 2008-A

- On April 24, we closed the \$232,545,000 UMBA Project Revenue Bonds, Senior Series 2008-1 and the \$26,580,000 UMBA Facilities Revenue Bonds, Senior Series 2008-A.
- These bonds were issued as variable rate demand bonds (VRDBs) with an initial interest rate of 2.30%.
- Weekly rate has varied from 1.25% to 2.20%.
- Lehman Brothers served as investment banker and the bond remarketing agent.

Series 2008-1 and 2008-A (Continued)

- This transaction created the following synthetic fixed rates by using a 70% of Libor swap formula:
 - Series 2008-1 swap with UBS at 3.388%
 - Series 2008-A swap with Lehman at 3.378%
- Both series received the highest short-term ratings from Standard & Poor's and Fitch.
- In 10 of the first 13 weeks, these swaps produced net positive payments to the Authority.

Series 2008-3 and 2008-4

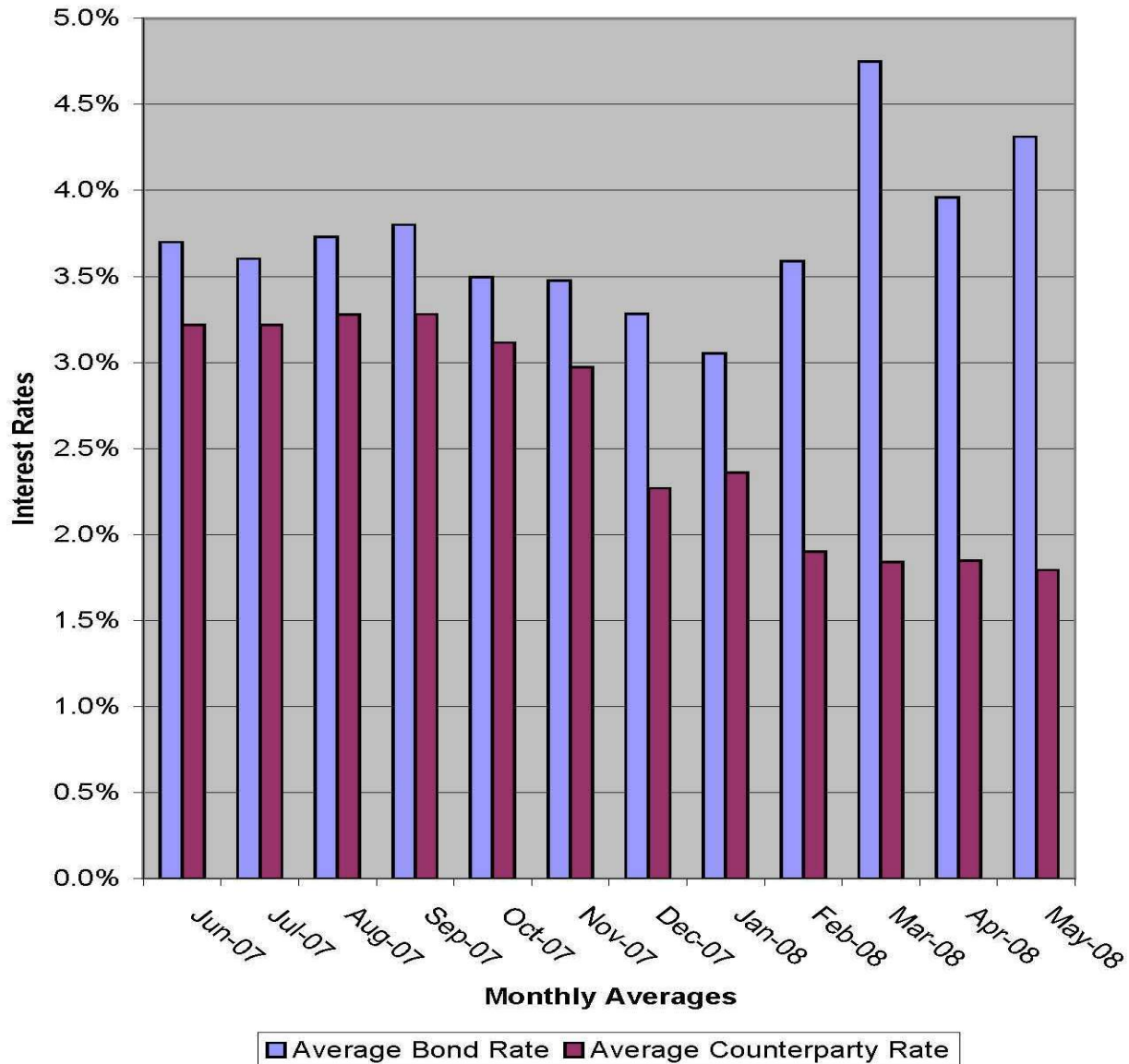
- 3. We refunded the \$243,830,00 UMBA Project and Refunding Revenue Bonds, Senior Series 2006-1 on June 10.
- The 2006-1 bonds were weekly VRDBs which are insured by Ambac, a monoline insurer whose own financial issues significantly increased the interest we pay on these bonds.
- We have a 3.482% swap with Citigroup which we were able to keep in place. If we had had to terminate the swap, we would have lost the entire amount of the projected \$19.5 m savings when compared to a fixed rate

Series 2008-3 and 2008-4(Cont.)

Because of Ambac's financial troubles, we were paying as much as 6.25% instead of 2.33% or less on the weekly rate.

- We lost about \$2 m from January to May so we needed to stop the bleeding or our entire amount of savings would have dissipated.
- We replaced Ambac for three years with a LOC from Bank of America for \$137 m and Commonwealth guarantee for \$104 m

UMBA 2006-1 Bond Interest versus Counterparty Payments



Series 2008-3 and 2008-4 (Cont.)

- This refunding restored the interest rate on the bonds which has been between 1.32% to 2.32% (instead of up to 6.25%) and has protected most of the earlier projected savings.
- We also made a unique deal with Ambac so if its value as a bond insurer is restored in three years, it will return as the insurer of our bonds. This provision could save us the expense of having an LOC on the bonds at that time.

UMBA 2008-3 Bond Interest vs. Counterparty Receipts



Series 2008-2

- On June 30, UMBA issued \$120,560,000 in bonds to finance three projects at the UMass Medical School and 12 projects at UMass Amherst.
- The Series 2008-2 bonds carry a fixed rate of interest and will be insured by Financial Security Assurance Inc., a AAA rated monoline insurer that has avoided credit problems experienced by some.

2008-2 Series

Bond Summary Statistics

- Dated Date 06/30/2008
- Last Maturity 05/01/2038

- Arbitrage Yield 4.934842%
- True Interest Cost (TIC) 4.878146%
- Net Interest Cost (NIC) 4.890869%
- All-In TIC 5.001906%
- Average Coupon 4.894381%

Green Status of Projects

- In its recent construction projects, UMBA has demonstrated commitment to reducing the impact of the built environment on the natural environment, the economy, and the health and productivity of users.
- UMBA does not mandate campuses to include any particular “green” elements in their projects.
- UMBA works with the campuses to analyze the costs and benefits of adding green elements to the building projects.
- Since 2004, UMBA has included the consideration of LEED building concepts in the development of each of its new construction projects. However, UMBA has not completed any LEED certified buildings.
- Two current projects plan to become LEED certified: the ETIC project at Lowell and the police station at Amherst.

LEED Certification

- The Leadership in Energy and Environmental Design (LEED) Green Building Rating System, provides a suite of standards for environmentally sustainable construction.
- LEED was developed by the United States Green Building Council (USGBC), a 501(c)(3) corporation.
- Since its inception in 1999, LEED has grown to encompass more than 14,000 projects in 50 US States and 30 countries covering 1.062 billion square feet of development area.

Why LEED was developed

- LEED was created to accomplish the following:
 - Define "green building" by establishing a common standard of measurement.
 - Promote integrated, whole-building design practices.
 - Recognize environmental leadership in the building industry.
 - Stimulate green competition.
 - Raise consumer awareness of green building benefits.
 - Transform the building market.

Areas Addressed by LEED

- Sustainable sites.
- Water efficiency.
- Energy and atmosphere.
- Materials and resources.
- Indoor environmental quality.
- Innovation and design process.

Green Building Initiatives

- At the Studio Arts Building, Central Heating Plant, the Integrated Science Building and the Recreation Building at Amherst, and the Research Building at Dartmouth, the Building Authority has undertaken “Green Building” initiatives to improve energy and resource conservation.
- While these initiatives, for example, low-energy lighting, sensor activated lighting, improved HVAC controls, and third party commissioning are on the LEED checklist, the Building Authority has not pursued LEED certification.

Amherst Studio Arts Building



- Fritted glass and solar shading devices on large expanses of the building's south-facing facades which serve to control sunlight and solar heat gain in the building.
- Occupancy sensors were provided to reduce lighting and HVAC system usage when spaces are unoccupied.
- Water efficient landscaping materials were used throughout.
- Energy recovery units help re-capture heat from conditioned exhaust air and use this heat to condition supply air.
- 3rd Party commissioning of systems was also provided.

Amherst Heating Plant



- Low-E & fritted glass curtain wall were utilized to reduce heat gain.
- Bike racks were installed which encourage alternative transportation uses.
- Use of grey water (treated water) from the Town of Amherst wastewater treatment plant for CHP instead of potable water.

Amherst Heating Plant

- Use of ultra low sulfur diesel fuel for the boilers and the combustion turbine generator
- The use of "BACT", best available control technology for the CHP emissions producing equipment.
- Use of premium efficiency motors [there are approximately 100 of them] for the boiler feed pumps, the desuperheater pumps, and other motors in the plant

Amherst Integrated Science



- Sunscreen to regulate solar light and heat gain in the building's atrium space
- A portion of the building is covered with a “green roof” – a waterproofing membrane covered with several feet of a lightweight soil mixture, which serves as a growing medium for low-maintenance planting materials. This green roof helps retain stormwater on the site.

Amherst Integrated Science

- Water reclaim – waste water from plumbing fixtures and the storm water captured and retained in underground tanks, is re-used for makeup water for the cooling towers.
- Renewable materials such as bamboo are used extensively throughout the building as a finish material on doors and cabinetry.
- A waste management plan was utilized to allow recycling of 100% of construction waste materials.
- Energy recovery units help re-capture heat from conditioned exhaust air and use this heat to condition supply air.
- A commissioning agency was hired to test and assure maximum operation efficiency of all major systems.
- State-of-the-art fume hood units were chosen to reduce the volume of treated air needed to operate them.

Amherst Student Recreation



- Solar shading devices on large expanses of the building's south and west-facing facades to control sunlight and solar heat gain in the building.
- 3rd Party commissioning of systems is also being provided.
- White roof to minimize heat gain.
- Maximum daylight opportunities in activity spaces.

Amherst Student Recreation

- Minimum glazing on north side
- New campus bus stop - shelter incorporated into project at Commonwealth Ave entrance
- Reduced paved/parking area - increased planted/grass areas
- Automatic flush and automatic faucets to minimize water usage

Dartmouth Projects Highlights



- Low albedo (white) roofing to reduce the heat island effect.
- Water efficient landscaping with no irrigation system to reduce water usage.
- Building systems commissioning to ensure optimum performance of MEP systems.
- Indoor chemical and pollution source control to minimize occupant exposure.
- Daylight and views for 90% of spaces to reduce reliance on artificial lighting and promote improved occupant wellbeing and performance.