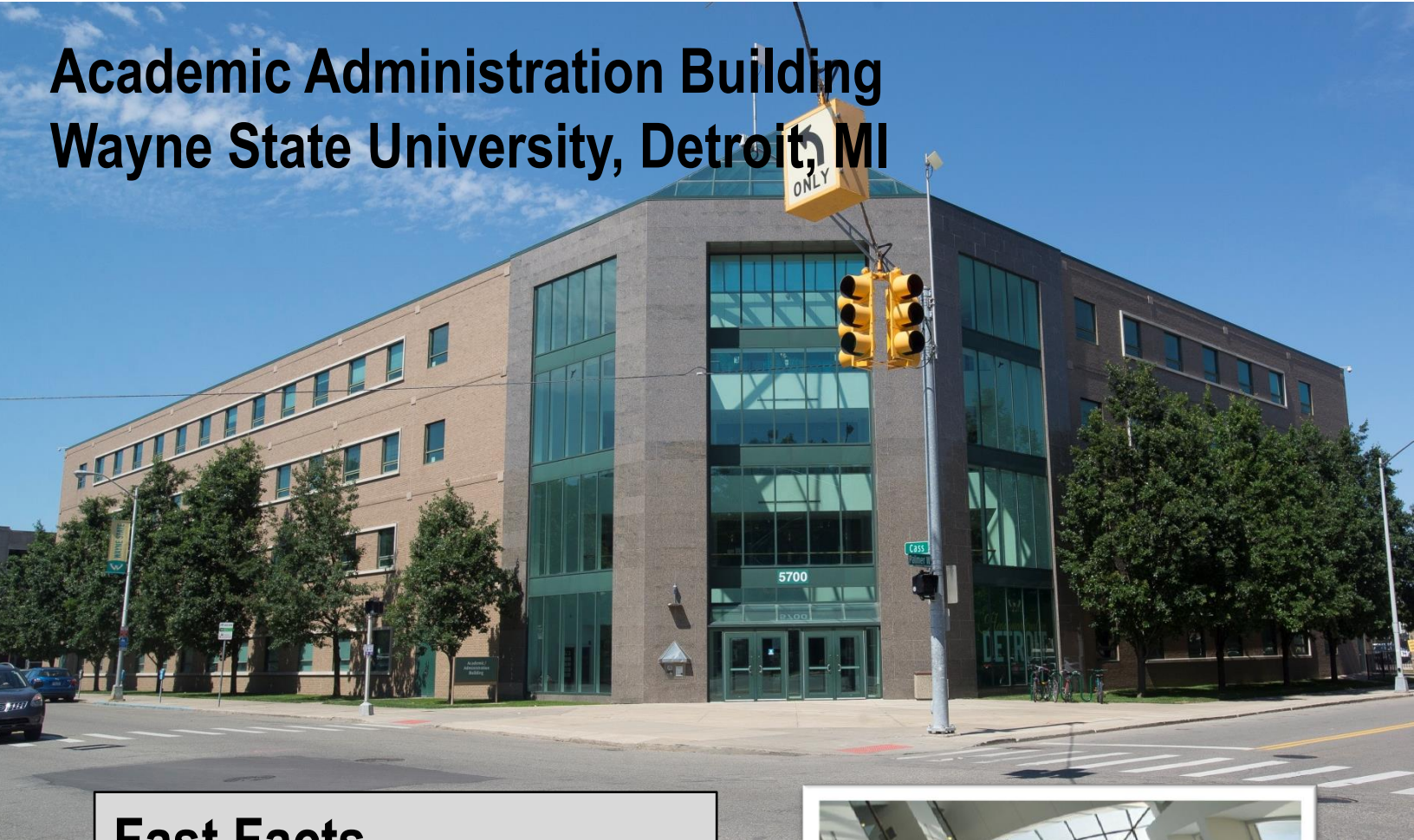




Newman Consulting Group LLC

Academic Administration Building Wayne State University, Detroit, MI



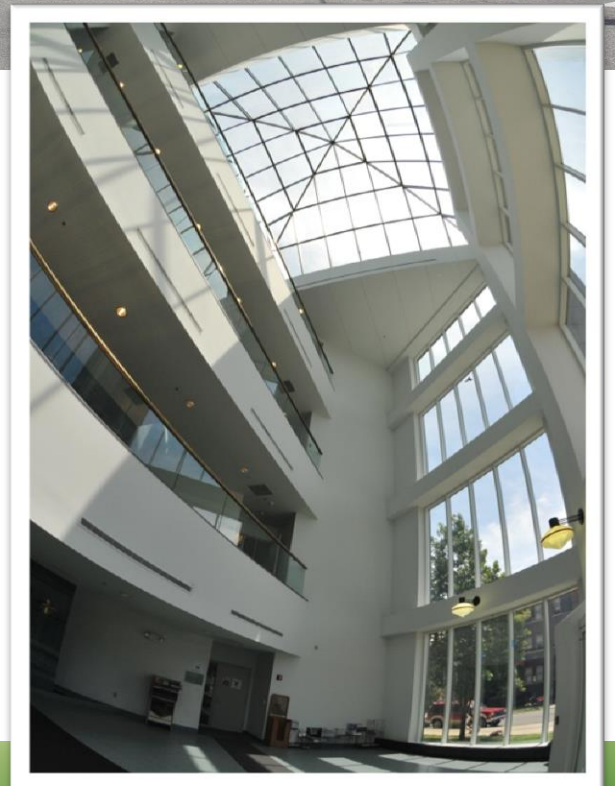
Fast Facts

A 4-story office building used by various University Departments, it includes offices, conference rooms and training areas. A vaulted atrium greets visitors entering the building.

- Year Built: 1995
- Size: 131,000 SF
- Use: Office building. Mostly open 8-5, M-F

Significant HVAC features:

- 4 VAV Air Handling Units with Variable Speed Drives – 1 per floor
- 2 air-cooled screw chillers and 3 gas-fired water heaters
- Centralized Building Automation system (BAS)



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Project background:

Wayne State University's Academic Administration Building faced many of the same concerns as other office buildings of a similar age. Tenants (in this case University employees) repeatedly complained to building maintenance staff that they were "too hot" or "too cold." And the costs of running the building kept creeping up.

As part of a DTE Energy and Nexant Retro-commissioning (RCx) project for no-cost and low-cost energy conservation measures (ECMs) with short-term payback, Newman Consulting Group (NCG) conducted an ASHRAE Level 2 Energy Analysis and RCx Study. This uncovered several opportunities that would not only make the tenants more comfortable, but also save money.

Strategies and Results:

The three greatest opportunities for savings involved adjusting the mixed air dampers, shifting the economizer setpoint, and optimizing the AHU schedules. These measures realized an estimated savings of more than \$20,000 per year after just a \$5,000 investment. This allowed the University to recoup its investment in just a few months, while continuing to save money for many years to come.

1. Adjust Mixed Air Dampers

Due to age, corrosion, damage, etc., the mixed air economizer dampers were either not fully opening or closing, or not working at all. We fixed the dampers so they would be properly responsive to the Building Automation System (BAS) and allow in only the proper amount of outside air to meet code and maintain indoor temperatures and occupant comfort levels.

- a. Implementation Cost: \$4,000
- b. Gas Energy Savings: 6,000 Ccf/year, \$3,700/year
- c. Electrical Energy Savings: 7,000 kWh/yr, \$1,000/year
- d. Simple Payback: 0.9 years

2. Shift Economizer Setpoint

With the dampers fixed, we moved the economizer setpoint up to 65° F so they respond only when necessary, as dictated by the BAS (see #3) to keep the inside temperature comfortable.

- a. Implementation Cost: \$400
- b. Gas Energy Savings: N/A
- c. Electrical Energy Savings: 7,000 kWh/yr, \$1,000/year
- d. Simple Payback: 0.5 years

3. Set Proper AHU Schedules

Before these measures, the system was bringing in too much outside air in the cold weather, especially at night, when the building was unoccupied. This kept the AHUs running almost 24/7 to keep the building temperature comfortable. Once the dampers were fixed and the setpoint adjusted, we reprogrammed the BAS so the AHUs ran only when people were in the building, typically 8 a.m. to 5 p.m., Monday through Friday.

- a. Implementation Cost: \$400
- b. Gas Energy Savings: 6,000 Ccf/year, \$3,800/year
- c. Electrical Energy Savings: 98,000 kWh/yr, \$11,000/year
- d. Simple Payback: Immediate

Measurement & Verification (M & V) using BAS and trending information ensured that savings estimates were being met. In reality, the savings were even greater than anticipated.

About Newman Consulting Group

Newman Consulting Group (NCG) is an EPA Energy Star® Partner, a Lean & Green Michigan and Rebuild Michigan® Partner, a DTE Energy and Michigan Saves Trade Ally. For decades NCG has been working with architects, engineers, building owners and contractors in Michigan and throughout the world to design and build more energy-efficient buildings to LEED®, Energy Star® and other sustainable guidelines.