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Reference: UVM Forestry Building

Subject: Energy Audit Status Report - DRAFT

Project No.: 160307

Potential Energy Conservation Measures (ECMs) Being Evaluated:

ECM #	Description	Benefits	Potential for Quick Payback (1-5 stars)
1	Replace (7) Roof top units with new (1.5-3.0 tons)	1. High efficiency gas heating. a. Multi-stage — Air source heat pumps 2. Higher efficiency cooling. Air sand a. 12 SEER → 17+ SEER 20 3. Better economizer control (enthalpy based). 4. Nearing end of useful life. a. 16 years old, 15-20 years typical lifespan.	★★★
1A	Replace (7) Roof top units with Air Source Heat Pumps	1. High efficiency 2. Needs full size heating for extreme low temps 3. Economizer difficult	★★★
2	Replace Energy Recovery Wheel	1. Higher recovery effectiveness. (up to 80%+)	★★
3	Install VAV boxes in (8) non-lab zones.	1. Reduction in fan energy. 2. Reduction in reheat energy.	★★★★★
4	Install VFD on SA fan (7.5 HP)	1. Reduction in fan energy. a. Controlled on duct static pressure. b. Works in conjunction with VAV box upgrade.	★★★★★
5	Replace Chiller (30 tons)	1. Higher Efficiency (IPLV 12 → 16) 2. Nearing end of useful life. 23? Years old, 20-25 years typical lifespan.	★★★
6	Replace Boiler(s) with Condensing Style	1. Higher Efficiency (85% → 95%+)	★★★
7	Segregate Lab and Non-Lab Air Handling	1. Reduce heating & cooling demand by eliminating 100% outdoor air to non-lab areas.	★
8	Upgrade Lab Controls	1. Some controls failing, need	★★★

		upgrade/replacement. 2. Base on flow offset vs. differential pressure to corridor. (Open door Syndrome)	
9	Convert Bldg Misc. Exhaust to ERV System (Restroom, Penthouse, & Janitor Closet)	1. 70-80% Reduction in heating/cooling energy for replacement air.	★★★★
10	Upgrade Transformers	1. Reduce electrical losses.	★★
11	Upgrade Domestic Water Heater (80 gal, 199 MBH) to Instantaneous Condensing Style	2. Eliminate Storage Losses 3. Higher Efficiency (80% → 95%+) 4. Nearing end of useful life. 19? Years old, 15-20 years typical lifespan.	★★★★
12	Eliminate Remaining Pneumatic Controls & Compressor/Drier	1. Better Control & Monitoring. 2. Reduction in elec energy use by eliminating compressor & drier. (Air leaks and actual demand).	★★★
13	Relocate Headhouse Cooler Condensers Outdoors	1. Reduce cooling load on building. (Increases heating load.)	★
14	Upgrade to Cog Belts on MUA unit and Gen Exh fan (7.5 HP each)	1. Reduction in belt losses.	★★★
15	Sequence of Operations Optimization	1. General reduction in energy use. 2. Better Monitoring	★★★
16	Biomass Option for Heating	1 Renewable Resource 2 Payback on financial terms alone difficult	★
17	DCV and ERV for Conf Room	1 Reduce ventilation heating and cooling cost.	★★
18	Condensing unit heaters for Greenhouse	1 Reduce heating cost	★★